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STRESS ANALYSIS OF CONICAL SHELLS

F. J. Stanek

OAK RIDGE NATIONAL LABORATORY

operated by

UNION CARBIDE CORPORATION

for the

U.S. ATOMIC ENERGY COMMISSION

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PREFACE

The fundamentals for the stress analysis of conical shells by use of the classical small-deflection theory have been presented in various texts, but before the development of the high-speed computing machines it was not feasible to present the analysis in a convenient and usable form. Now, however, with the aid of these high-speed machines, all necessary functions can be evaluated by the fundamental analyst and tabulated in a convenient form for use by the design engineer. It is the intent of this report to bridge the gap between theory and design.

The report is presented in several parts. Parts I and II are sufficient for the analysis of a specific conical shell. Part III consists of several illustrative examples and the necessary additional equations for "connecting" a cylinder or a flat circular plate to either end of a cone. These equations pertain to the "funnel" and the "flower pot" problems, respectively. Part IV gives the derivation of the conical-shell formulas, and part V consists of tables of values of the Schleicher functions and their first derivatives, which form the core for the values of almost all the other required functions but do not apply directly in the stress analysis of conical shells.

The author is indebted to the personnel of the Numerical Analysis Department (headed by J. E. Rowe) at the Oak Ridge Gaseous Diffusion Plant for their programing, evaluating, and tabulating of the various functions included in the report. The actual programing and computing was done under the supervision of E. M. Kidd and G. B. Knight.

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Part I

CONICAL-SHELL FORMULAS AND THEIR APPLICATION

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Introduction	3
Symbol and Sign Convention for Conical Shells	5
Conical-Shell Formulas	6
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INTRODUCTION

Almost any conical shell of uniform thickness, truncated or complete, and loaded with any combination of the axisymmetrical loads shown in Fig. 1, may be analyzed by the procedure presented in this report. Poisson's ratio for the material of the shell should be approximately equal to 0.3, and the maximum displacement normal to the surface should be small, relative to the thickness of the shell.

The stress analysis of conical shells by use of the classical small-deflection theory stems from the solution of a fourth-order differential equation whose independent variable, x , is defined by the coordinate transformation

$$x = 2\beta\sqrt{y},$$

where y is the coordinate measured from the vertex, along the surface of the cone, and β is a geometrical constant. Hence the conical-shell formulas are expressed and listed as functions of x , and tables of values of all the necessary functions of x are provided.

The exact solution to the fourth-order differential equation is four infinite series in x . These infinite series are of a type which is difficult to evaluate for large values of x , even with the aid of the present high-speed computing machines. Fortunately, each of these series may be evaluated with sufficient accuracy for large values of x by use of its asymptotic expansion. This is mentioned here only to point out that there are two sets of tables of values, each set complete in itself. The first is designated as set A of part II and includes the range of x values from 0.05 to 16, and its values are based on the evaluation of the infinite series. Set B of part II includes the range of x values from 10 to 40 and is based on the evaluation of the asymptotic expansion of the series. The procedures for the use of either set are identical.

In addition to the necessary functions which stem from the solution of the fourth-order differential equation, there are also certain auxiliary functions of x which appear in the various general formulas for the analysis of conical shells. These auxiliary functions were evaluated and are also included in the tables.

Each of the various functions appearing in the conical-shell formulas is derived and defined in part IV; however, it is not necessary to understand the derivation in order to understand the application.

In order to obtain a complete analysis (evaluation of the stresses and the displacements) of a truncated conical shell, five constants of integration need to be evaluated. In general, this will require, initially, the solution of a set of four linear simultaneous equations, which, for long cones ($b - a$, large; see Fig. 1), will frequently reduce to two sets of two linear simultaneous equations. For a complete cone (closed to the vertex), two of the constants of integration must be taken equal to zero.

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Fig. 1. Symbol and Sign Convention for Conical Shells. See part IV for additional figures.

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SYMBOL AND SIGN CONVENTION FOR CONICAL SHELLS

y = coordinate along surface of cone from vertex (meridional direction) (in.)*

a = minimum value of the coordinate y for the cone (in.)

b = maximum value of the coordinate y for the cone (in.)

α = one-half the vertex angle of the cone

b = uniform thickness of cone (in.)

$$\beta = \left(10.92 \frac{\cot^2 \alpha}{b^2} \right)^{1/4}, \text{ the coordinate transformation parameter (in.)}^{-1/2}$$

$x = 2\beta\sqrt{y}$, the dimensionless coordinate of the cone

w = lateral displacement of middle surface of cone, positive inward (in.)

v = tangential displacement of middle surface of cone, positive in positive y direction (in.)

p = uniform pressure, positive when internal (psi)

Q = shearing force in cone; see Fig. 1 for positive direction (lb/in.)

N = normal force in cone, tension positive (lb/in.)

M = bending moments in cone, positive when tensile stresses are in outside surface (lb-in./in. = lb)

E = Young's modulus of elasticity (psi)

Subscripts a and b = small and large opening of cone ends, respectively

Subscripts y and θ = meridional and circumferential directions, respectively

C_n = the four constants of integration, C_1 , C_2 , C_3 , and C_4 (lb)

C_5 = another constant of integration (lb)

$\rho = p/2\beta^4$, the load parameter due to the uniform pressure p (lb)

$k = a(N_a \cot \alpha + Q_a - a\beta^4 \rho) \equiv b(N_b \cot \alpha + Q_b - b\beta^4 \rho)$

= the load parameter due to edge forces and the uniform pressure (lb)

*This is the most common set of units used in the USA; however, any consistent set may be used.

CONICAL-SHELL FORMULAS

In formulas 1 through 7 it is understood (1) that $\sum C_n(\dots) = C_1(\dots) + C_2(\dots) + C_3(\dots) + C_4(\dots)$ and (2) that all capital letters with the subscript n or an Arabic number (with the exception of C) and appearing on the right side of the equation denote a function of x whose values are tabulated in part II.

Shell Constants

Geometrical constants

$$(i) \quad \beta^4 = 10.920 \frac{\cot^2 \alpha}{b^2}$$

$$(ii) \quad \gamma = \beta^2 = 3.3045 \frac{\cot \alpha}{b}$$

Loading constants

$$(iii) \quad \rho = \frac{p}{2\beta^4}$$

$$(iv) \quad \begin{aligned} k &= a(N_a \cot \alpha + Q_a - a\beta^4 \rho) \\ &\equiv b(N_b \cot \alpha + Q_b - b\beta^4 \rho) \end{aligned}$$

Coordinate Transformation

$$(v) \quad x = 2\beta\sqrt{y} \quad \text{or}$$

$$y = \frac{1}{\gamma} \frac{x^2}{4}$$

Internal Membrane Forces

$$(1) \quad Q = \gamma \sum C_n Q_n$$

$$(1a) \quad N_y = \gamma \tan \alpha (-\sum C_n Q_n + kK_1 + \rho P_1)$$

$$(2) \quad N_\theta = \gamma \tan \alpha (-\sum C_n N_{\theta n} + \rho P_2)$$

Internal Bending Moments

$$(3) \quad M_y = \sum C_n M_{yn} - kK_2 - 3.9\rho$$

$$(4) \quad M_\theta = \sum C_n M_{\theta n} + kK_2 - 3.9\rho$$

Displacements of Middle Surface

$$(5) \quad \frac{dw}{dy} = \frac{\gamma \tan^2 \alpha}{Eb} (\sum C_n W'_n + kK_1 - 3\rho P_1)$$

$$(6) \quad w = \frac{\tan^2 \alpha}{Eb} (\sum C_n W_n + kK_3 - \rho P_3 + C_5)$$

$$(7) \quad v = \frac{\tan \alpha}{Eb} (\sum C_n V_n + kK_4 + \rho P_4 + C_5)$$

Internal Membrane Stresses

$$(8) \quad \sigma_{my} = \frac{N_y}{b}$$

$$(8a) \quad \sigma_{m\theta} = \frac{N_\theta}{b}$$

Internal Bending Stresses (+ for outside surface, - for inside surface)

$$(9) \quad \sigma_{By} = \pm \frac{6M_y}{b^2}$$

$$(9a) \quad \sigma_{B\theta} = \pm \frac{6M_\theta}{b^2}$$

Total or Principal Stresses (+ for outside surface, - for inside surface)

$$(10) \quad \sigma_y = \frac{N_y}{b} \pm \frac{6M_y}{b^2}$$

$$(10a) \quad \sigma_\theta = \frac{N_\theta}{b} \pm \frac{6M_\theta}{b^2}$$

PROCEDURE

The values of the four sub- n functions appearing in formulas 1 through 7 are given in tables designated with the corresponding Arabic numbers. The values of the auxiliary K functions are given in Table 8, and the values of the auxiliary P functions are given in Table 9. When formulas 1 through 7 are used, it may be helpful to note that only the load parameter k is multiplied by the designated K function. Similarly, only the load parameter ρ is multiplied by the designated P function.

In order to analyze a given conical shell, it is convenient to designate the minimum value of x as $x_a = 2\beta\sqrt{a}$, and the maximum value as $x_b = 2\beta\sqrt{b}$. Only that portion of the tables containing the x values in the range $x_a \leq x \leq x_b$ is needed for a complete analysis of the cone under consideration. If this x range falls within 0 to 16, the tables in set A must be used. If it falls within 10 to 40, the tables in set B must be used.

For a cone whose x_a value is below 10 and whose x_b value is above 16, it may be assumed, for most practical purposes, that the values in set B are a continuation of the values in set A. Otherwise two sets of constants of integration would have to be evaluated by imposing the compatibility conditions at $x = 16$.

The exact value of x_a and/or x_b for a given cone may not be one of the x values appearing in the tables. In this case the x values in the tables are selected which are nearest to the exact values of x_a and x_b , and the values of a and b are adjusted slightly so that the selected values of x_a and x_b are obtained. The adjusted values of a and b should be used throughout the analysis, so that the appropriate physical interpretation may be given to the results.

Either of the definitions may be used for the loading constant k , as defined by formula iv, that is, whichever is the more convenient for the particular problem under consideration. It should be noted that of the five quantities, N_a , Q_a , N_b , Q_b , and ρ , any four may be designated arbitrarily. The remaining one must maintain equilibrium; that is, the summation of forces parallel to the axis of the cone must be zero.

The values of the constants of integration are determined by solving a set of linear simultaneous equations. Each equation in this set is a mathematical statement of a boundary condition (also called edge condition) which must be specified for the cone under consideration. A boundary condition is defined as the specification for one of the conical-shell formulas at some designated coordinate, y (hence x), of the cone, usually at one of the edges; hence the additional name, "edge condition."

Four boundary conditions must be specified in order to determine the values of the four constants of integration, C_n . These conditions are usually obtained by specifying two boundary conditions at each of the two edges of the cone, or, more directly, by specifying two conditions among the quantities Q , M_y , and dw/dy (formulas 1, 3, and 5, respectively) at each edge of the cone.

These four boundary conditions will yield, initially, a set of four linear simultaneous equations. However, for long cones, where the loads at one edge have very little or no effect at the other edge, this set will reduce to two sets of two linear simultaneous equations. This will become apparent from a brief study of the initial set of four equations (see set of simultaneous equations in solution to illustrative funnel problem). For a complete cone (closed to the vertex), the constants C_3 and C_4 must be taken equal to zero.

The constant of integration C_5 is determined by specifying the displacement w and/or v at one of the edges of the cone. If both w and v are specified (a fixed edge, for example), a set of five linear simultaneous equations will initially result. This set will usually, however, readily reduce to a set of four simultaneous equations. Once the constants of integration are evaluated, the desired results are obtained by substituting their values in the appropriate formula.

The x values of the cone may be readily converted to the corresponding y values by using the second equation of formula v and the values of the auxiliary P_1 function in Table 9, because the P_1 function is equal to $x^2/4$.

Some of these points, and others, are illustrated in several examples in part III.

Part II

TABLES OF VALUES OF ALL NECESSARY FUNCTIONS

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Set A, x Values from 0.05 to 16.00, Inclusive	15
Set B, x Values from 10.00 to 40.00, Inclusive	53

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INTRODUCTION

The basic functions for the various conical-shell formulas stem from a fourth-order differential equation whose solution is obtained by developing a set of four infinite series in the independent variable x . Two sets of series are possible, one in terms of x^n and the other in terms of x^{-n} , but the x^n series are difficult to evaluate for large values of x , even with the present-day high-speed computing machines, while a very good approximation of the x^{-n} series is obtained by omitting all terms which contain $n \geq 2$. Hence the x^{-n} series must be used for large values of x ($x \gtrsim 10$). (The simplified form of the x^{-n} series is known as the "asymptotic expansion" of the x^n series.)

The values for all necessary functions which appear in the conical-shell formulas are tabulated in part II. The values in set A of part II include the range of x values from 0.050 through 16.00 and are based on the evaluation of the x^n (exact) series. The values in set B of part II include the range of x values from 10.00 through 40.00 and are based on the evaluation of the simplified form of the x^{-n} (asymptotic expansion) series.

In order to obtain good approximations to the actual values of a and b of the cone under consideration, the magnitude of the increment of x was increased with the value of x . The magnitude of the increment of x and the range of x values to which the increment pertains are designated at the beginning of each set. The x values in the overlapping range (from 10 through 16) of the two sets of tables are identical. The eight auxiliary functions for this range are repeated in set B to make each set complete within itself.

The value of each function is listed to eight digits (followed by a minus sign in the case of negative values). The value of the function is the eight-digit number multiplied by ten raised to the power (number with sign) which precedes the eight-digit number; for example, the values of each of the four Q_n functions at $x = 0.800$ from Table 1A are

$$Q_1 = 2- 2.6661000- = -2.6661000 \times 10^{-2} = -0.026661000 ,$$

$$Q_2 = 1- 4.9946669- = -4.9946669 \times 10^{-1} = -0.49946669 ,$$

$$Q_3 = 1 \ 1.2074710 = 1.2074710 \times 10 = 12.074710 ,$$

$$Q_4 = 1.7695011 .$$

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Tables in Set A

1A, Values of the Four Q_n Functions Appearing in the Formulas for Q and N_y	16
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3A, Values of the Four M_{yn} Functions Appearing in the Formula for M_y	24
4A, Values of the Four $M_{\theta n}$ Functions Appearing in the Formula for M_{θ}	28
5A, Values of the Four W'_n Functions Appearing in the Formula for dw/dy	32
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7A, Values of the Four V_n Functions Appearing in the Formula for v	40
8A, Values of the Four Auxiliary K Functions	44
9A, Values of the Four Auxiliary P Functions	48

The values of the functions in the first seven tables of set A are based on the evaluation of the x^n (exact) series. All tables in set A have the following ranges of x values and the corresponding increments of x :

Range of x Values	Increment of x
0.050– 5.00	0.050
5.000–10.00	0.100
10.00 –16.00	0.250

Table 1A

Values of the Four Q_n Functions Appearing in the Formulas for Q and N_y

x	Q_1	Q_2	Q_3	Q_4
0.050	4- 1.6000000-	1- 4.9999998-	5 8.1487200	2 5.0904608
0.100	4- 4.3200000-	1- 4.9999988-	4 5.0928572	2 1.2707500
0.150	4- 9.2977768-	1- 4.9999931-	4 1.0059283	1 5.6340456
0.200	3- 1.6700000-	1- 4.9999789-	3 3.1823100	1 3.1584330
0.250	3- 2.6035200-	1- 4.9999488-	3 1.3030791	1 2.0126675
0.300	3- 3.7511112-	1- 4.9998947-	2 6.2809951	1 1.3903645
0.350	3- 5.1043264-	1- 4.9998043-	2 3.3877681	1 1.0152193
0.400	3- 6.6662500-	1- 4.9996665-	2 1.9837310	7.7181565
0.450	3- 8.4369380-	1- 4.9994659-	2 1.2366562	6.0501497
0.500	2- 1.0416800-	1- 4.9991862-	1 8.0985980	4.8577580
0.550	2- 1.2603504-	1- 4.9988082-	1 5.5184897	3.9762099
0.600	2- 1.4998999-	1- 4.9983126-	1 3.8852040	3.3063721
0.650	2- 1.7602746-	1- 4.9976758-	1 2.8109766	2.7857020
0.700	2- 2.0414613-	1- 4.9968736-	1 2.0812896	2.3731567
0.750	2- 2.3433316-	1- 4.9958799-	1 1.5717916	2.0408971
0.800	2- 2.6661000-	1- 4.9946669-	1 1.2074710	1.7695011
0.850	2- 3.0095779-	1- 4.9932036-	9.4149902	1.5450837
0.900	2- 3.3738617-	1- 4.9914576-	7.4375252	1.3575041
0.950	2- 3.7588522-	1- 4.9893958-	5.9433827	1.1992171
1.000	2- 4.1644960-	1- 4.9869812-	4.7980820	1.0645139
1.050	2- 4.5908424-	1- 4.9841761-	3.9088031	1- 9.4901112
1.100	2- 5.0378279-	1- 4.9809409-	3.2102717	1- 8.4929758
1.150	2- 5.5053819-	1- 4.9772331-	2.6558033	1- 7.6268659
1.200	2- 5.9935250-	1- 4.9730097-	2.2114916	1- 6.8703831
1.250	2- 6.5021440-	1- 4.9682240-	1.8523662	1- 6.2063180
1.300	2- 7.0311946-	1- 4.9628291-	1.5598011	1- 5.6207005
1.350	2- 7.5806113-	1- 4.9567763-	1.3197392	1- 5.1020980
1.400	2- 8.1503280-	1- 4.9500121-	1.1214537	1- 4.6410754
1.450	2- 8.7402457-	1- 4.9424854-	1- 9.5668034	1- 4.2297941
1.500	2- 9.3502888-	1- 4.9341395-	1- 8.1899014	1- 3.8616977
1.550	2- 9.9803373-	1- 4.9249191-	1- 7.0334046	1- 3.5312671
1.600	1- 1.0630272-	1- 4.9147640-	1- 6.0574246	1- 3.2338287
1.650	1- 1.1299981-	1- 4.9036136-	1- 5.2301869	1- 2.9654070
1.700	1- 1.1989323-	1- 4.8914060-	1- 4.5261932	1- 2.7225993
1.750	1- 1.2698121-	1- 4.8780770-	1- 3.9248541	1- 2.5024816
1.800	1- 1.3426242-	1- 4.8635612-	1- 3.4094328	1- 2.3025288
1.850	1- 1.4173489-	1- 4.8477903-	1- 2.9662537	1- 2.1205519
1.900	1- 1.4939674-	1- 4.8306946-	1- 2.5840746	1- 1.9546445
1.950	1- 1.5724560-	1- 4.8122035-	1- 2.2536129	1- 1.8031420
2.000	1- 1.6527946-	1- 4.7922447-	1- 1.9671613	1- 1.6645852
2.050	1- 1.7349560-	1- 4.7707431-	1- 1.7182931	1- 1.5376885
2.100	1- 1.8189147-	1- 4.7476235-	1- 1.5016254	1- 1.4213188
2.150	1- 1.9046409-	1- 4.7228089-	1- 1.3126349	1- 1.3144716
2.200	1- 1.9921042-	1- 4.6962190-	1- 1.1474993	1- 1.2162569
2.250	1- 2.0812721-	1- 4.6677736-	1- 1.0029809	1- 1.1258818

Table 1A (continued)

	01	02	03	04
2.300	1- 2.1721079-	1- 4.6373913-	2- 8.7632968	1- 1.0426390
2.350	1- 2.2645739-	1- 4.6049912-	2- 7.6519728	2- 9.6589377
2.400	1- 2.3586303-	1- 4.5704854-	2- 6.6757416	2- 8.9508110
2.450	1- 2.4542337-	1- 4.5337896-	2- 5.8173561	2- 8.2968895
2.500	1- 2.5513386-	1- 4.4948186-	2- 5.0619926	2- 7.6925760
2.550	1- 2.6498965-	1- 4.4534817-	2- 4.3968254	2- 7.1337443
2.600	1- 2.7498556-	1- 4.4096923-	2- 3.8107790	2- 6.6166225
2.650	1- 2.8511611-	1- 4.3633578-	2- 3.2942456	2- 6.1378403
2.700	1- 2.9537569-	1- 4.3143906-	2- 2.8388623	2- 5.6942940
2.750	1- 3.0575797-	1- 4.2626983-	2- 2.4373712	2- 5.2832050
2.800	1- 3.1625673-	1- 4.2081872-	2- 2.0833972	2- 4.9020124
2.850	1- 3.2686516-	1- 4.1507664-	2- 1.7713823	2- 4.5483924
2.900	1- 3.3757602-	1- 4.0903405-	2- 1.4964799	2- 4.2202430
2.950	1- 3.4838186-	1- 4.0268162-	2- 1.2543883	2- 3.9156114
3.000	1- 3.5927488-	1- 3.9600992-	2- 1.0413541	2- 3.6327334
3.050	1- 3.7024670-	1- 3.8900961-	3- 8.5407276	2- 3.3699635
3.100	1- 3.8128871-	1- 3.8167126-	3- 6.8961860	2- 3.1258352
3.150	1- 3.9239176-	1- 3.7398534-	3- 5.4542290	2- 2.8989620
3.200	1- 4.0354640-	1- 3.6594246-	3- 4.1919968	2- 2.6880829
3.250	1- 4.1474261-	1- 3.5753332-	3- 3.0892774	2- 2.4920490
3.300	1- 4.2597006-	1- 3.4874850-	3- 2.1281422	2- 2.3097903
3.350	1- 4.3721785-	1- 3.3957871-	3- 1.2928642	2- 2.1403148
3.400	1- 4.4847466-	1- 3.3001481-	4- 5.6915743	2- 1.9827163
3.450	1- 4.5972872-	1- 3.2004762-	5- 5.5433395-	2- 1.8361456
3.500	1- 4.7096776-	1- 3.0966828-	4- 5.9204668-	2- 1.69998429
3.550	1- 4.8217899-	1- 2.9886778-	3- 1.0506725-	2- 1.5730698
3.600	1- 4.9334908-	1- 2.8763750-	3- 1.4401028-	2- 1.4551874
3.650	1- 5.0446430-	1- 2.7596893-	3- 1.7682678-	2- 1.3455372
3.700	1- 5.1551021-	1- 2.6385359-	3- 2.0421450-	2- 1.2435936
3.750	1- 5.2647212-	1- 2.5128337-	3- 2.2681864-	2- 1.1487986
3.800	1- 5.3733457-	1- 2.3825033-	3- 2.4517524-	2- 1.0606638
3.850	1- 5.4808149-	1- 2.2474681-	3- 2.5979895-	3- 9.7874075
3.900	1- 5.5869651-	1- 2.1076547-	3- 2.7113296-	3- 9.0258838
3.950	1- 5.6916252-	1- 1.9629903-	3- 2.7957470-	3- 8.3182456
4.000	1- 5.7946197-	1- 1.8134083-	3- 2.8548875-	3- 7.6607875
4.050	1- 5.8957652-	1- 1.6588439-	3- 2.8918196-	3- 7.0500732
4.100	1- 5.9948752-	1- 1.4992367-	3- 2.9094888-	3- 6.4829361
4.150	1- 6.0917553-	1- 1.3345301-	3- 2.9103554-	3- 5.9563824
4.200	1- 6.1862061-	1- 1.1646703-	3- 2.8967401-	3- 5.4677258
4.250	1- 6.2780227-	2- 9.8961141-	3- 2.8706365-	3- 5.0142510
4.300	1- 6.3669926-	2- 8.0930880-	3- 2.8338143-	3- 4.5937383
4.350	1- 6.4529001-	2- 6.2372516-	3- 2.7879467-	3- 4.2038435
4.400	1- 6.5355218-	2- 4.3282789-	3- 2.7343933-	3- 3.8425169
4.450	1- 6.6146283-	2- 2.3659013-	3- 2.6747462-	3- 3.5077254
4.500	1- 6.6899838-	3- 3.4991604-	3- 2.6092993-	3- 3.1977613

Table 1A (continued)

	Q ₁	Q ₂	Q ₃	Q ₄
4.550	1- 6.7613494-	2- 1.7198251	3- 2.5398698-	3- 2.9108094
4.600	1- 6.8284776-	2- 3.8433951	3- 2.4671144-	3- 2.6456529
4.650	1- 6.8911154-	2- 6.0207951	3- 2.3917220-	3- 2.4002462
4.700	1- 6.9490051-	2- 8.2519492	3- 2.3144286-	3- 2.1734830
4.750	1- 7.0018835-	1- 1.0536719	3- 2.2358492-	3- 1.9643092
4.800	1- 7.0494801-	1- 1.2874875	3- 2.1565126-	3- 1.7711748
4.850	1- 7.0915214-	1- 1.5266095	3- 2.0769589-	3- 1.5931340
4.900	1- 7.1277263-	1- 1.7709972	3- 1.9974024-	3- 1.4290743
4.950	1- 7.1578099-	1- 2.0206013	3- 1.9183261-	3- 1.2780401
5.000	1- 7.1814820-	1- 2.2753617	3- 1.8400734-	3- 1.1392731
5.100	1- 7.2084045-	1- 2.8000646	3- 1.6869169-	4- 8.9437802
5.200	1- 7.2060736-	1- 3.3444185	3- 1.5394777-	4- 6.8845509
5.300	1- 7.1720039-	1- 3.9075569	3- 1.3989941-	4- 5.1633776
5.400	1- 7.1036447-	1- 4.4884168	3- 1.2663040-	4- 3.7279718
5.500	1- 6.9983964-	1- 5.0857291	3- 1.1416967-	4- 2.5412685
5.600	1- 6.8536122-	1- 5.6980004	3- 1.0256008-	4- 1.5656873
5.700	1- 6.666179-	1- 6.3235012	4- 9.1781960-	5- 7.7309335
5.800	1- 6.4347202-	1- 6.9602537	4- 8.1826574-	5- 1.3504578
5.900	1- 6.1552261-	1- 7.6060147	4- 7.2689222-	5- 3.7202045-
6.000	1- 5.8254534-	1- 8.2582663	4- 6.4333903-	5- 7.6892421-
6.100	1- 5.4427526-	1- 8.9141979	4- 5.6711922-	4- 1.0719402-
6.200	1- 5.0045250-	1- 9.5706997	4- 4.9798413-	4- 1.2974265-
6.300	1- 4.5082465-	1- 0.224342	4- 4.3555962-	4- 1.4553207-
6.400	1- 3.9514898-	1- 0.871371	4- 3.7891942-	4- 1.5615582-
6.500	1- 3.3319541-	1- 1.1507702	4- 3.2830763-	4- 1.6216068-
6.600	1- 2.6474825-	1- 2.128895	4- 2.8283318-	4- 1.6475258-
6.700	1- 1.8961048-	1- 2.730166	4- 2.4256350-	4- 1.6437583-
6.800	1- 1.0760607-	1- 0.3306367	4- 2.0648400-	4- 1.6153621-
6.900	2- 1.8583709-	1- 0.3851983	4- 1.7477306-	4- 1.5710892-
7.000	2- 7.7579806	1- 4.361140	4- 1.4661342-	4- 1.5112232-
7.100	1- 1.8097495	1- 4.827586	4- 1.2201911-	4- 1.4417810-
7.200	1- 2.9165703	1- 5.244716	4- 1.0047062-	4- 1.3669129-
7.300	1- 4.0964006	1- 5.605552	5- 8.1157070-	4- 1.2829633-
7.400	1- 5.3489407	1- 5.902776	5- 6.5382971-	4- 1.1998489-
7.500	1- 6.6733902	1- 6.128719	5- 5.0901670-	4- 1.1213488-
7.600	1- 8.0684096	1- 6.275391	5- 3.8852219-	4- 1.0349881-
7.700	1- 9.5320714	1- 6.334495	5- 2.17837354-	5- 9.5065865-
7.800	1- 1.061802	1- 6.297448	5- 1.9758826-	5- 8.7084571-
7.900	1- 2.654329	1- 6.155407	5- 1.2492900-	5- 7.9323250-
8.000	1- 4.305648	1- 5.899308	6- 5.9544994-	5- 7.2412012-
8.100	1- 6.010937	1- 5.519905	7- 8.5407588-	5- 6.5487802-
8.200	1- 7.764533	1- 5.007803	6- 3.3058537	5- 5.8969313-
8.300	1- 9.559855	1- 4.353516	6- 6.6475164	5- 5.2868048-
8.400	2- 1.389366	1- 3.547521	6- 9.2806157	5- 4.7187597-
8.500	2- 3.244511	1- 2.580319	5- 1.1303310	5- 4.1925156-

Table 1A (continued)

x	Q_1	Q_2	Q_3	Q_4
8.600	2.5115669	1.1442508	5- 1.2803148	5- 3.7072810-
8.700	2.6992104	1.0124852	5- 1.3857967	5- 3.2618649-
8.800	2.8861916	1- 8.6183735	5- 1.4536732	5- 2.8547700-
8.900	3.0711999	1- 6.9144373	5- 1.4900336	5- 2.4842719-
9.000	3.2527999	1- 5.0048561	5- 1.5002353	5- 2.1484869-
9.100	3.4294281	1- 2.8819959	5- 1.4889724	5- 1.8454264-
9.200	3.5993891	2- 5.3888891	5- 1.4603413	5- 1.5730440-
9.300	3.7608544	1- 2.0306360-	5- 1.4179010	5- 1.3292732-
9.400	3.9118601	1- 4.8318266-	5- 1.3647279	5- 1.1120583-
9.500	4.0503048	1- 7.8688618-	5- 1.3034674	6- 9.1937895-
9.600	4.1739517	1.1144704-	5- 1.2363803	6- 7.4927023-
9.700	4.2804298	1.4660945-	5- 1.1653867	6- 5.9983757-
9.800	4.3672313	1.8417631-	5- 1.0921035	6- 4.6926753-
9.900	4.4317231	2.2413103-	5- 1.0178816	6- 3.5583678-
10.000	4.4711444	2.6643804-	6- 9.4383684	6- 2.5791691-
10.250	4.4408472	3.8207062-	6- 7.6504105	7- 7.1181620-
10.500	4.1877564	5.1044791-	6- 6.0235452	7- 4.9094315
10.750	3.6608894	6.4894214-	6- 4.6064186	6- 1.2034357
11.000	2.8076925	7.9363891-	6- 3.4145215	6- 1.5654148
11.250	1.5762375	9.3913848-	6- 2.4421622	6- 1.6862083
11.500	2- 8.1908744-	1 1.0783710-	6- 1.6711142	6- 1.6492591
11.750	2.2080815-	1 1.2024415-	6- 1.0766971	6- 1.5166032
12.000	4.8321286-	1 1.3005197-	7- 6.3190233	6- 1.3330093
12.250	7.9672195-	1 1.3598003-	7- 3.1007147	6- 1.1296504
12.500	1 1.1603861-	1 1.3655539-	8- 8.6513950	7- 9.2724428
12.750	1 1.5703197-	1 1.3012994-	8- 6.0624858-	7- 7.3866950
13.000	1 2.0189702-	1 1.1491277-	7- 1.5001204-	7- 5.7108993
13.250	1 2.4943507-	8.9020933-	7- 1.9711579-	7- 4.2764107
13.500	1 2.9792599-	5.0551798-	7- 2.1440425-	7- 3.0873571
13.750	1 3.4505357-	1- 2.3194257	7- 2.1166235-	7- 2.1305379
14.000	1 3.8783901-	7.1214505	7- 1.9636109-	7- 1.3827039
14.250	1 4.2258946-	1 1.5739667	7- 1.7403654-	8- 8.1576307
14.500	1 4.4486880-	1 2.6158333	7- 1.4865044-	8- 4.0035222
14.750	1 4.4950124-	1 3.8372729	7- 1.2291718-	8- 1.0816827
15.000	1 4.3061693-	1 5.2276744	8- 9.8588454-	9- 8.6630169-
15.250	1 3.8175295-	1 6.7635378	8- 7.6694083-	8- 2.0669075-
15.500	1 2.9602128-	1 8.4055264	8- 5.7739584-	8- 2.7120555-
15.750	1 1.6635824-	2 1.0095432	8- 4.1864623-	8- 2.9595901-
16.000	1.4131805	2 1.1753199	8- 2.8966532-	8- 2.9357193-

Table 2A

Values of the Four N_{θ} Functions Appearing in the Formula for N_{θ}

θ	$N_{\theta 1}$	$N_{\theta 2}$	$N_{\theta 3}$	$N_{\theta 4}$
0.050	2.0000000	1- 5.0000000	5 8.1487430	1- 2.4960000
0.100	4- 8.2000000	1- 4.9999960	4 5.0930428	1- 2.4814000
0.150	3- 1.8900000	1- 4.9999801	4 1.0060884	1- 2.4619000
0.200	3- 3.3300000	1- 4.9999381	3 3.1837292	1- 2.4387000
0.250	3- 5.2090000	1- 4.9998478	3 1.3043576	1- 2.4114300
0.300	3- 7.4990000	1- 4.9996832	2 6.2926365	1- 2.3811300
0.350	2- 1.0208000	1- 4.9994137	2 3.3984477	1- 2.3481200
0.400	2- 1.3334000	1- 4.9989998	2 1.9935831	1- 2.3128500
0.450	2- 1.6875000	1- 4.9983984	2 1.2457838	1- 2.2756200
0.500	2- 2.0831000	1- 4.9975587	1 8.1834476	1- 2.2367600
0.550	2- 2.5205000	1- 4.9964258	1 5.5975788	1- 2.1964800
0.600	2- 2.9996000	1- 4.9949375	1 3.9590868	1- 2.1550150
0.650	2- 3.5201600	1- 4.9930271	1 2.8801217	1- 2.1125750
0.700	2- 4.0822600	1- 4.9906218	1 2.1460993	1- 2.0693380
0.750	2- 4.6860000	1- 4.9876420	1 1.6326149	1- 2.0254540
0.800	2- 5.3310600	1- 4.9840018	1 1.2646143	1- 1.9810840
0.850	2- 6.0175900	1- 4.9796125	1 9.9523366	1- 1.9363560
0.900	2- 6.7453500	1- 4.9743764	1 7.9432041	1- 1.8913920
0.950	2- 7.5142200	1- 4.9681914	1 6.4195665	1- 1.8462950
1.000	2- 8.3246500	1- 4.9609488	1 5.2467333	1- 1.8011680
1.050	2- 9.1758700	1- 4.9525363	4 4.3317051	1- 1.7561010
1.100	1- 1.0067950	1- 4.9428328	3 3.6090514	1- 1.7111790
1.150	1- 1.0007800	1- 4.9317142	3 3.0319516	1- 1.6664740
1.200	1- 1.1974090	1- 4.9190487	2 2.5663795	1- 1.6220551
1.250	1- 1.4041450	1- 4.8885259	1 1.8758699	1- 1.5343136
1.300	1- 1.5134980	1- 4.8703783	1 1.6180708	1- 1.4910978
1.350	1- 1.6268010	1- 4.8501045	1 1.4030593	1- 1.4483814
1.400	1- 1.7440210	1- 4.8275446	1 1.2225027	1- 1.4062051
1.450	1- 1.8651180	1- 4.8025357	1 1.0699101	1- 1.3646072
1.500	1- 1.9900530	1- 4.7749074	1- 9.4018219	1- 1.3236188
1.600	1- 2.1187810	1- 4.7444849	1- 8.2927863	1- 1.2832686
1.650	1- 2.2512490	1- 4.7110890	1- 7.3397466	1- 1.2435831
1.700	1- 2.3874000	1- 4.6745344	1- 6.5167697	1- 1.2045855
1.750	1- 2.5271770	1- 4.6346303	1- 5.8028644	1- 1.1662938
1.800	1- 2.6705110	1- 4.5911822	1- 5.1809231	1- 1.1287262
1.850	1- 2.8173290	1- 4.5439912	1- 4.6369261	1- 1.0918968
1.900	1- 2.9675540	1- 4.4928522	1- 4.1593112	1- 1.0558169
1.950	1- 3.1211020	1- 4.4375561	1- 3.7384981	1- 1.0204958
2.000	1- 3.2778770	1- 4.3778917	1- 3.3665019	2- 9.8594250
2.050	1- 3.4377820	1- 4.3136396	1- 3.0366365	2- 9.5216160
2.100	1- 3.6007120	1- 4.2445800	1- 2.7432752	2- 9.1915720
2.150	1- 3.7665490	1- 4.1704864	1- 2.4816663	2- 8.8693040
2.200	1- 3.9351710	1- 4.0911317	1- 2.2477737	2- 8.5548272
2.250	1- 4.1064450	1- 4.0062847	1- 2.0381587	2- 8.2481428

Table 2A (continued)

x	$N_{\theta 1}$	$N_{\theta 2}$	$N_{\theta 3}$	$N_{\theta 4}$
2.300	1- 4.2802300-	1- 3.9157101-	1- 1.8498811-	2- 7.9492240-
2.350	1- 4.4563780-	1- 3.8191678-	1- 1.6804130-	2- 7.6580326-
2.400	1- 4.6347260-	1- 3.7164200-	1- 1.5275781-	2- 7.3745260-
2.450	1- 4.8151030-	1- 3.6072238-	1- 1.3894906-	2- 7.0986589-
2.500	1- 4.9973290-	1- 3.4913321-	1- 1.2645174-	2- 6.8303493-
2.550	1- 5.1812096-	1- 3.3685024-	1- 1.1512345-	2- 6.5695484-
2.600	1- 5.3665422-	1- 3.2384843-	1- 1.0483965-	2- 6.3161472-
2.650	1- 5.5531136-	1- 3.1010315-	2- 9.5491920-	2- 6.0700897-
2.700	1- 5.7406898-	1- 2.9558937-	2- 8.6984023-	2- 5.8312645-
2.750	1- 5.9290334-	1- 2.8028207-	2- 7.9232076-	2- 5.5995541-
2.800	1- 6.1178905-	1- 2.6415656-	2- 7.2161416-	2- 5.3748837-
2.850	1- 6.3069926-	1- 2.4718802-	2- 6.5705915-	2- 5.1571292-
2.900	1- 6.4960611-	1- 2.2935169-	2- 5.9807509-	2- 4.9461740-
2.950	1- 6.6847989-	1- 2.1062319-	2- 5.4413605-	2- 4.7419029-
3.000	1- 6.8728954-	1- 1.9097830-	2- 4.9477841-	2- 4.5442066-
3.050	1- 7.0600273-	1- 1.7039289-	2- 4.4958641-	2- 4.3529404-
3.100	1- 7.2458505-	1- 1.4884339-	2- 4.0818676-	2- 4.1679965-
3.150	1- 7.4300130-	1- 1.2630663-	2- 3.7024605-	2- 3.9892223-
3.200	1- 7.6121415-	1- 1.0275986-	2- 3.3546220-	2- 3.8165018-
3.250	1- 7.7918463-	2- 7.8180830-	2- 3.0356444-	2- 3.6497167-
3.300	1- 7.9687230-	2- 5.2548000-	2- 2.7430682-	2- 3.4887235-
3.350	1- 8.1423481-	2- 2.5840440-	2- 2.4746870-	2- 3.3333656-
3.400	1- 8.3122832-	3- 1.9619900-	2- 2.2284757-	2- 3.1835397-
3.450	1- 8.4780702-	2- 3.0878520-	2- 2.0026074-	2- 3.0390905-
3.500	1- 8.6392316-	2- 6.0927610-	2- 1.7954342-	2- 2.8999172-
3.550	1- 8.7952759-	2- 9.2126570-	2- 1.6054460-	2- 2.7658473-
3.600	1- 8.9456906-	1- 1.2449171-	2- 1.4312569-	2- 2.6367707-
3.650	1- 9.0899431-	1- 1.5803818-	2- 1.2715929-	2- 2.5125509-
3.700	1- 9.2274863-	1- 1.9277967-	2- 1.1253347-	2- 2.3930477-
3.750	1- 9.3577512-	1- 2.2872861-	3- 9.9140650-	2- 2.2781478-
3.800	1- 9.4801484-	1- 2.6589583-	3- 8.6885100-	2- 2.1677165-
3.850	1- 9.5940730-	1- 3.0429100-	3- 7.5676730-	2- 2.0616083-
3.900	1- 9.6988980-	1- 3.4392141-	3- 6.5435934-	2- 1.9597115-
3.950	1- 9.7939783-	1- 3.8479294-	3- 5.6088099-	2- 1.8619106-
4.000	1- 9.8786497-	1- 4.2690951-	3- 4.7561625-	2- 1.7680638-
4.050	1- 9.9522291-	1- 4.7027300-	3- 3.9795879-	2- 1.6780642-
4.100	1.0014010-	1- 5.1488307-	3- 3.2729502-	2- 1.5917863-
4.150	1.0063272-	1- 5.6073719-	3- 2.6309940-	2- 1.5091081-
4.200	1.0099277-	1- 6.0782994-	3- 2.0488313-	2- 1.4299250-
4.250	1.0121260-	1- 6.5615410-	3- 1.5217401-	2- 1.3541168-
4.300	1.0128448-	1- 7.0569920-	3- 1.0454415-	2- 1.2815646-
4.350	1.0120042-	1- 7.5645220-	4- 6.1596130-	2- 1.2121774-
4.400	1.0095229-	1- 8.0839670-	4- 2.2978850-	2- 1.1458380-
4.450	1.0053180-	1- 8.6151400-	4- 1.1654370-	2- 1.0824355-
4.500	1- 9.9930436-	1- 9.1578120-	4- 4.2623270-	2- 1.0218739-

	N ₀₁	N ₀₂	N ₀₃	N ₀₄
4.550	1- 9.9139594-	1- 9.7117240	4- 7.0211170	3- 9.6405236-
4.600	1- 9.8150466-	1.0276584	4- 9.4680990	3- 9.0890878-
4.650	1- 9.6954098-	1.0852059	3- 1.1629908	3- 8.5626978-
4.700	1- 9.5541426-	1.1437779	3- 1.3527690	3- 8.0610147-
4.750	1- 9.3903219-	1.2033333	3- 1.5184176	3- 7.5830460-
4.800	1- 9.2030169-	1.2638269	3- 1.6618460	3- 7.1277580-
4.850	1- 8.9912794-	1.3252087	3- 1.7848353	3- 6.6943710-
4.900	1- 8.7541539-	1.3874247	3- 1.8894840	3- 6.2819723-
4.950	1- 8.4906757-	1.4504166	3- 1.9768311	3- 5.8897572-
5.000	1- 8.01998759-	1.5141200	3- 2.0487000	3- 5.5175903-
5.100	1- 7.5323836-	1.6433821	3- 2.1511786	3- 4.8274391-
5.200	1- 6.7437979-	1.7745985	3- 2.2071872	3- 4.2064365-
5.300	1- 5.8262115-	1.9070678	3- 2.2233878	3- 3.6487310-
5.400	1- 4.7717492-	2.0399951	3- 2.2093887	3- 3.1489555-
5.500	1- 3.57226293-	2.1724864	3- 2.1688749	3- 2.7024260-
5.600	1- 2.2212441-	2.3035444	3- 2.1097246	3- 2.3046407-
5.700	2- 7.1022910-	2.4320623	3- 2.0348165	3- 1.9509698-
5.800	2- 9.6743540	2.5568201	3- 1.9475599	3- 1.6377052-
5.900	1- 2.8183371	2.6764795	3- 1.8522199	3- 1.3612652-
6.000	1- 4.8485203	2.7895813	3- 1.7515917	3- 1.1178050-
6.100	1- 7.0633710	2.8945404	3- 1.6469270	4- 9.0497040-
6.200	1- 9.4675000	2.9896443	3- 1.5415301	4- 7.1875984-
6.300	1- 2.064587	3.0730509	3- 1.4358219	4- 5.5733941-
6.400	1- 4.8572277	3.1427865	3- 1.3308516	4- 4.1742609-
6.500	1- 7.846973	3.1967446	3- 1.2293705	4- 2.9782193-
6.600	2.1033728	3.2326901	3- 1.1301138	4- 1.9546315-
6.700	2.4416042	3.2482568	3- 1.0347119	4- 1.0817517-
6.800	2.7990686	3.2409527	4- 9.4382318	5- 3.5926722-
6.900	3.1752512	3.2081665	4- 8.5778960	5- 2.5216210
7.000	3.5694265	3.1471686	4- 7.7489929	5- 7.4734923
7.100	3.9806368	3.0551238	4- 6.9911671	4- 1.1550538
7.200	4.4076722	2.9290993	4- 6.275404	4- 1.4676873
7.300	4.8490456	2.7660768	4- 5.6015468	4- 1.7146552
7.400	5.3029761	2.5629653	4- 4.9855575	4- 1.9006769
7.500	5.7673605	2.3166221	4- 4.4058339	4- 2.0305562
7.600	6.2397546	2.0238639	4- 3.8696160	4- 2.124678
7.700	6.7173479	1.6814990	4- 3.3968527	4- 2.1746294
7.800	7.1969419	1.2863421	4- 2.9397075	4- 2.1778228
7.900	7.6749277	8.3525020	4- 2.5475834	4- 2.1711862
8.000	8.1472667	3.2514876	4- 2.1863531	4- 2.1242444
8.100	8.6094633	2.4693110-	4- 1.8579875	4- 2.0683460
8.200	9.0565508	1- 8.8381570-	4- 1.5629743	4- 1.9978504
8.300	9.4830738	1.5881462-	4- 1.2990630	4- 1.9160333
8.400	9.8830671	2.3623333-	4- 1.0640359	4- 1.8257392
8.500	1.0250047	3.2085070-	5- 8.55722618	4- 1.7294239

Table 2A (continued)

Table 2A (continued)

x	$N_{\theta 1}$	$N_{\theta 2}$	$N_{\theta 3}$	$N_{\theta 4}$
8.600	1 1.0576996	4.1284641-	5- 6.7203405	4- 1.6291949
8.700	1 1.0856356	5.1236089-	5- 5.1093764	4- 1.5268469
8.800	1 1.1080026	6.1948929-	5- 3.7050225	4- 1.4238957
8.900	1 1.1239353	7.3427475-	5- 2.4888690	4- 1.3216089
9.000	1 1.1325149	8.5670152-	5- 1.4434855	4- 1.2210344
9.100	1 1.1327690	9.8668760-	6- 5.5244730	4- 1.1230251
9.200	1 1.1236736	1 1.1240766-	6- 1.9965292-	4- 1.0282635
9.300	1 1.1041551	1 1.2686302-	6- 8.2720893-	5- 9.3728184
9.400	1 1.0730930	1 1.4200190-	5- 1.3436118-	5- 8.5048226
9.500	1 1.0293241	1 1.5778144-	5- 1.7612710-	5- 7.6815365
9.600	9.7164622	1 1.7414786-	5- 2.0916432-	5- 6.9048755
9.700	8.9882455	1 1.9103567-	5- 2.3452654-	5- 6.1759238
9.800	8.0959704	1 2.0836653-	5- 2.5317915-	5- 5.4950572
9.900	7.0268294	1 2.2604847-	5- 2.6600351-	5- 4.8620595
10.000	5.7679074	1 2.4397480-	5- 2.7380102-	5- 4.2762209
10.250	1.7057941	1 2.8901600-	5- 2.7589342-	5- 3.0098484
10.500	3.8192956-	1 3.3239063-	5- 2.6040893-	5- 2.0054093
10.750	1 1.0985799-	1 3.7097939-	5- 2.3450878-	5- 1.2310937
11.000	1 1.9937120-	1 4.0085314-	5- 2.0343161-	6- 6.5258587
11.250	1 3.0760468-	1 4.1722066-	5- 1.7086984-	6- 2.3599481
11.500	1 4.3461468-	1 4.1441003-	5- 1.3930128-	7- 5.0289928-
11.750	1 5.7934540-	1 3.8589735-	5- 1.1027322-	6- 2.3453834-
12.000	1 7.3929342-	1 3.2439808-	6- 8.4639576-	6- 3.4119046-
12.250	1 9.1013911-	1 2.2203877-	6- 6.2754442-	6- 3.9076357-
12.500	2 1.0853558-	7.0627855-	6- 4.4626455-	6- 4.0001959-
12.750	2 1.2558126-	1 1.3795465	6- 3.0038936-	6- 3.8229229-
13.000	2 1.4093946-	1 4.1122927	6- 1.8641029-	6- 3.4789833-
13.250	2 1.5306687-	1 7.5543282	6- 1.0014832-	6- 3.0458020-
13.500	2 1.6006347-	2 1.1746622	7- 3.7230046-	6- 2.5794386-
13.750	2 1.5966088-	2 1.6698380	8- 6.5895488	6- 2.1186845-
14.000	2 1.4922951-	2 2.2374845	7- 3.5223874	6- 1.6887393-
14.250	2 1.2581132-	2 2.8683380	7- 5.2140488	6- 1.3044079-
14.500	1 8.6185198-	2 3.5458015	7- 6.0311908	7- 9.7279374-
14.750	1 2.6973404-	2 4.2442972	7- 6.2211968	7- 6.9551651-
15.000	1 5.5202404	2 4.9275726	7- 5.9841888	7- 4.7048399-
15.250	2 1.6350726	2 5.5470597	7- 5.4774911	7- 2.9327418-
15.500	2 3.0061276	2 6.0404062	7- 4.8210144	7- 1.5818055-
15.750	2 4.6834414	2 6.3303433	7- 4.1029755	8- 5.8975245-
16.000	2 6.6724955	2 6.3240847	7- 3.3854784	8- 1.0555428

Table 3A

Values of the Four M_{yz} Functions Appearing in the Formula for M_y

x	M_{y1}	M_{y2}	M_{y3}	M_{y4}
0.050	1- 6.5000000-	4- 2.0000000	2 1.5246420	5 5.7041270
0.100	1- 6.4999960-	4- 9.5000000	1 3.7874360	4 3.5651857
0.150	1- 6.4999780-	3- 2.1600000	1 1.6659950	3 7.0430990
0.200	1- 6.4999320-	3- 3.8310000	3 9.2314320	3 2.2290362
0.250	1- 6.4998320-	3- 5.9900000	5 7.968600	2 9.1343388
0.300	1- 6.4996510-	3- 8.6250000	3 3.9329800	2 4.4083379
0.350	1- 6.4993550-	2- 1.1739000	2 2.8108450	2 2.3821174
0.400	1- 6.4989000-	2- 1.5334000	2 2.0841610	2 1.3984638
0.450	1- 6.4982390-	2- 1.9406000	1 1.5874823	1 8.7478699
0.500	1- 6.4973150-	2- 2.3956000	1 1.2336510	1 5.7538681
0.550	1- 6.4960680-	2- 2.8987100	1 9.7321480	1 3.9420320
0.600	1- 6.4949430-	2- 3.4495800	1 7.7641030	1 2.7935256
0.650	1- 6.4923300-	2- 4.0482400	1 6.2445310	1 2.0368287
0.700	1- 6.4896830-	2- 4.6947100	1 5.0501330	1 1.5217123
0.750	1- 6.4864060-	2- 5.3889900	1 4.0972360	1 1.1610774
0.800	1- 6.4824020-	2- 6.1309000	1 3.3274190	9.0237304
0.850	1- 6.4775730-	2- 6.9204600	1 2.6988950	7.1278396
0.900	1- 6.4718140-	2- 7.7575300	1 2.1811205	5.7119465
0.950	1- 6.4650100-	2- 8.6420900	1 1.7513563	4.6365517
1.000	1- 6.4570430-	2- 9.5740000	1 1.3923735	3.8073086
1.050	1- 6.447890-	1- 1.0553120	1 1.0909318	3.1596443
1.100	1- 6.4371150-	1- 1.1579310	2 8.3671360	2.6459699
1.150	1- 6.4248840-	1- 1.2652390	2 6.2158520	2.2352106
1.200	1- 6.4109520-	1- 1.3772150	2 4.3905980	1.9029320
1.250	1- 6.3951670-	1- 1.4938370	2 2.8391210	1.6315492
1.300	1- 6.3773750-	1- 1.6150810	2 1.5189660	1.4079296
1.350	1- 6.3574110-	1- 1.7409170	3 3.9531800	1.2221490
1.400	1- 6.3351080-	1- 1.8713100	3 5.6058820-	1.0666232
1.450	1- 6.3102900-	1- 2.0062280	2 1.3726685-	9.3549862
1.500	1- 6.2827780-	1- 2.1456270	2 2.0609789-	8.2421302
1.550	1- 6.2523830-	1- 2.2894630	2 2.6423853-	7.2918005
1.600	1- 6.2189140-	1- 2.4376893	2 3.1311997-	6.4755589
1.650	1- 6.1821730-	1- 2.5902477	2 3.5396111-	5.7706907
1.700	1- 6.1419560-	1- 2.7470790	2 3.8780589-	5.1589119
1.750	1- 6.0980540-	1- 2.9081206	2 4.1554944-	4.6254083
1.800	1- 6.0502500-	1- 3.0732975	2 4.3796767-	4.1580934
1.850	1- 5.9983280-	1- 3.2425340	2 4.5573126-	3.7470500
1.900	1- 5.9420610-	1- 3.4157441	2 4.6942369-	3.3840889
1.950	1- 5.8812170-	1- 3.5928379	2 4.7955327-	3.0624143
2.000	1- 5.8155650-	1- 3.77737151	2 4.8656694-	2.7763535
2.050	1- 5.7448630-	1- 3.9582697	2 4.9085494-	2.5211485
2.100	1- 5.6688670-	1- 4.1463860	2 4.9276154-	2.2927876
2.150	1- 5.5873290-	1- 4.3379408	2 4.9258894-	2.0878758
2.200	1- 5.4999980-	1- 4.5328020	2 4.9060568-	1.9035240
2.250	1- 5.4066170-	1- 4.7308261	2 4.8704974-	1.7372644

Table 3A (continued)

x	M_{y1}	M_{y2}	M_{y3}	M_{y4}
2.300	1- 5.3069270-	1- 4.9318631	2- 4.8213070-	1- 1.5869821
2.350	1- 5.2006650-	1- 5.1357500	2- 4.7603512-	1- 1.4508538
2.400	1- 5.0875650-	1- 5.3423148	2- 4.6892827-	1- 1.3273059
2.450	1- 4.9673610-	1- 5.5513731	2- 4.6095918-	1- 1.2149699
2.500	1- 4.8397770-	1- 5.7627302	2- 4.5225767-	1- 1.1126576
2.550	1- 4.7045470-	1- 5.9761787	2- 4.4294250-	1- 1.0193298
2.600	1- 4.5613920-	1- 6.1914988	2- 4.3311604-	2- 9.3407315
2.650	1- 4.4100390-	1- 6.4084619	2- 4.2287375-	2- 8.5609182
2.700	1- 4.2502110-	1- 6.6268168	2- 4.1229762-	2- 7.8467437
2.750	1- 4.0816300-	1- 6.8463074	2- 4.0145925-	2- 7.1919962
2.800	1- 3.9040220-	1- 7.0666608	2- 3.9042801-	2- 6.5911223
2.850	1- 3.7171100-	1- 7.2875881	2- 3.7926115-	2- 6.0391767
2.900	1- 3.5206190-	1- 7.5087891	2- 3.6801012-	2- 5.5318069
2.950	1- 3.3142768-	1- 7.7299435	2- 3.5672194-	2- 5.0650440
3.000	1- 3.0978127-	1- 7.9507194	2- 3.4543867-	2- 4.6353779
3.050	1- 2.8709578-	1- 8.1707671	2- 3.3419514-	2- 4.2396424
3.100	1- 2.6334476-	1- 8.3897173	2- 3.2302459-	2- 3.8749820
3.150	1- 2.3850224-	1- 8.6071883	2- 3.1195337-	2- 3.5388337
3.200	1- 2.1254261-	1- 8.8227810	2- 3.0100769-	2- 3.2288621
3.250	1- 1.8544083-	1- 9.0360750	2- 2.9021020-	2- 2.9429661
3.300	1- 1.5717255-	1- 9.2466330	2- 2.7957865-	2- 2.6792239
3.350	1- 1.2771406-	1- 9.4540020	2- 2.6912712-	2- 2.4359011
3.400	2- 9.7042450-	1- 9.6577070	2- 2.5887249-	2- 2.2114010
3.450	2- 6.5135760-	1- 9.8572560	2- 2.4882468-	2- 2.0042704
3.500	2- 3.1972880-	1.0052135	2- 2.3899644-	2- 1.8131956
3.550	3- 2.4662300	1.0241813	2- 2.2939264-	2- 1.6369661
3.600	2- 3.8200470	1.0425738	2- 2.2002145-	2- 1.4744600
3.650	2- 7.5247500	1.0603336	2- 2.1088898-	2- 1.3246409
3.700	1- 1.1362359	1.0774017	2- 2.0199697-	2- 1.1865991
3.750	1- 1.5334361	1.0937167	2- 1.9335083-	2- 1.0594520
3.800	1- 1.9442076	1.1092152	2- 1.8495173-	3- 9.4240367
3.850	1- 2.3686696	1.1238318	2- 1.7679860-	3- 8.3470688
3.900	1- 2.8069177	1.1374987	2- 1.6889349-	3- 7.3569923
3.950	1- 3.2590322	1.1501466	2- 1.6123633-	3- 6.4475339
4.000	1- 3.7250726	1.1617036	2- 1.5382402-	3- 5.6126287
4.050	1- 4.2050768	1.1720959	2- 1.4665619-	3- 4.8471337
4.100	1- 4.6990597	1.1812473	2- 1.3972982-	3- 4.1457968
4.150	1- 5.2070129	1.1890798	2- 1.3304166-	3- 3.5041006
4.200	1- 5.7288983	1.1955139	2- 1.2658932-	3- 2.9178533
4.250	1- 6.2646578	1.2004668	2- 1.2036893-	3- 2.3829310
4.300	1- 6.8141998	1.2038546	2- 1.1437524-	3- 1.8955857
4.350	1- 7.3774043	1.2055912	2- 1.0860621-	3- 1.4523452
4.400	1- 7.9541194	1.2055886	2- 1.0305625-	3- 1.0501065
4.450	1- 8.5441631	1.2037568	3- 9.7720368-	4- 6.8579920
4.500	1- 9.1473148	1.2000039	3- 9.2594105-	4- 3.5655720

Table 3A (continued)

π	M_{y1}	M_{y2}	M_{y3}	M_{y4}
4.550	1- 9.7633190	1.1942364	3- 8.7672808-	5- 5.9849220
4.600	1.0391886	1.1863590	3- 8.2953918-	4- 2.0667559-
4.650	1.1032683	1.1762745	3- 7.8426239-	4- 4.4547415-
4.700	1.1685338	1.1638844	3- 7.4089699-	4- 6.5844047-
4.750	1.2349435	1.1490887	3- 6.9937532-	4- 8.4766280-
4.800	1.3024515	1.1317861	3- 6.5964056-	3- 1.0148923-
4.850	1.3710069	1.1118736	3- 6.2164308-	3- 1.1617476-
4.900	1.4405547	1.0892472	3- 5.8532500-	3- 1.2902634-
4.950	1.5110346	1.0638019	3- 5.5063452-	3- 1.4013334-
5.000	1.5823809	1.0354321	3- 5.1758083-	3- 1.4966779-
5.100	1.7273841	1- 9.6949050	3- 4.5591257-	3- 1.6451035-
5.200	1.8749310	1- 8.9056200	3- 3.9999000-	3- 1.7453438-
5.300	2.0242945	1- 7.9778130	3- 3.4938297-	3- 1.8036896-
5.400	2.1746476	1- 6.9028430	3- 3.0371164-	3- 1.8294976-
5.500	2.3250584	1- 5.6721490	3- 2.6261880-	3- 1.8263659-
5.600	2.4744844	1- 4.2773270	3- 2.2576701-	3- 1.8020443-
5.700	2.6217673	1- 2.7102150	3- 1.9277770-	3- 1.7594706-
5.800	2.7656277	2- 9.6298030	3- 1.6336538-	3- 1.7020802-
5.900	2.9046600	2- 9.7176920-	3- 1.3724259-	3- 1.6341522-
6.000	3.0373292	1- 3.1008843-	3- 1.1408727-	3- 1.5585899-
6.100	3.1619663	1- 5.4305456-	4- 9.3712870-	3- 1.4767912-
6.200	3.2767652	1- 7.9661428-	4- 7.5768263-	3- 1.3921349-
6.300	3.3797811	1.0712113-	4- 6.0099903-	3- 1.3051541-
6.400	3.4689277	1.3671830-	4- 4.6427282-	3- 1.2171757-
6.500	3.5419757	1.6847386-	4- 3.4647013-	3- 1.1308782-
6.600	3.5965569	2.0239484-	4- 2.4488892-	3- 1.0452638-
6.700	3.6301617	2.3847212-	4- 1.5748792-	4- 9.6194284-
6.800	3.6401436	2.7667867-	5- 8.4387590-	4- 8.8187798-
6.900	3.6237259	3.1696761-	5- 2.1916475-	4- 8.0535769-
7.000	3.5780028	3.5927004-	5- 2.9398227	4- 7.3091525-
7.100	3.4999515	4.0349293-	5- 7.2251953	4- 6.6251098-
7.200	3.3864407	4.4951693-	4- 1.0576134	4- 5.9741285-
7.300	3.2342434	4.9719376-	4- 1.3297662	4- 5.3580756-
7.400	3.0400485	5.4634443-	4- 1.5407222	4- 4.7894086-
7.500	2.8004837	5.9675622-	4- 1.6941515	4- 4.2531288-
7.600	2.5121256	6.4818069-	4- 1.8139714	4- 3.7530594-
7.700	2.1715338	7.0033100-	4- 1.8894317	4- 3.3133407-
7.800	1.7752655	7.5287960-	4- 1.9165690	4- 2.8804309-
7.900	1.3199124	8.0545576-	4- 1.9332164	4- 2.5101048-
8.000	1- 8.0212800	8.5764362-	4- 1.9070084	4- 2.1684896-
8.100	1- 2.1866600	9.0897920-	4- 1.8718825	4- 1.8554252-
8.200	1- 4.3358160-	9.5894860-	4- 1.8209425	4- 1.5728918-
8.300	1.1575408-	1 1.0069869-	4- 1.7574292	4- 1.3190056-
8.400	1.9559076-	1 1.0524748-	4- 1.6841764	4- 1.0918777-
8.500	2.8310974-	1 1.0947382-	4- 1.6036485	5- 8.8963611-

Table 3A (continued)

x		M_{y1}		M_{y2}		M_{y3}		M_{y4}
8.600		3.7851888-	1	1.1330466-	4-	1.5179765	5-	7.1044349-
8.700		4.8198633-	1	1.1666120-	4-	1.4289910	5-	5.5251154-
8.800		5.9363416-	1	1.1945882-	4-	1.3382526	5-	4.1411245-
8.900		7.1353143-	1	1.2160713-	4-	1.2470808	5-	2.9358791-
9.000		8.4168695-	1	1.2300989-	4-	1.1565798	5-	1.8935561-
9.100		9.7804157-	1	1.2356518-	4-	1.0676624	6-	9.9913910-
9.200	1	1.1224599-	1	1.2316552-	5-	9.8107214	6-	2.3844952-
9.300	1	1.2747221-	1	1.2169807-	5-	8.9740365	6-	4.0183865
9.400	1	1.4345145-	1	1.1904488-	5-	8.1712051	6-	9.3419336
9.500	1	1.6014209-	1	1.1508333-	5-	7.4057229	5-	1.3702308
9.600	1	1.7749128-	1	1.0968648-	5-	6.6800945	5-	1.7207292
9.700	1	1.9543395-	1	1.0272374-	5-	5.9959725	5-	1.9956494
9.800	1	2.1389181-		9.4061400-	5-	5.3542770	5-	2.2041605
9.900	1	2.3277240-		8.3563470-	5-	4.7553084	5-	2.3546707
10.000	1	2.5196794-		7.1092510-	5-	4.1988458	5-	2.4548591
10.250	1	3.0047811-		3.0380483-	5-	2.9884938	5-	2.5294219
10.500	1	3.4770406-		2.5629687	5-	2.0201376	5-	2.4233830
10.750	1	3.9044766-		9.8875323	5-	1.2671968	5-	2.2068952
11.000	1	4.2466230-	1	1.9094812	6-	6.9954831	5-	1.9318804
11.250	1	4.4539482-	1	3.0287597	6-	2.8658106	5-	1.6354335
11.500	1	4.4676115-	1	4.3486040	9-	8.1216200-	5-	1.3428793
11.750	1	4.2197060-	1	5.8596965	6-	1.8904025-	5-	1.0704313
12.000	1	3.6341366-	1	7.5378981	6-	3.0120018-	6-	8.2743869
12.250	1	2.6283277-	1	9.3404077	6-	3.5687406-	6-	6.1824229
12.500	1	1.1159447-	2	1.1201674	6-	3.7220226-	6-	4.4366914
12.750		9.8915660	2	1.3029222	6-	3.6013220-	6-	3.0220811
13.000	1	3.7675545	2	1.4699637	6-	3.3076562-	6-	1.9091066
13.250	1	7.2872654	2	1.6054992	6-	2.9175096-	6-	1.0606178
13.500	2	1.1594966	2	1.6900125	6-	2.4868179-	7-	4.3662174
13.750	2	1.6705338	2	1.7001248	6-	2.0547684-	9-	2.3967800-
14.000	2	2.2588488	2	1.6086468	6-	1.6472582-	7-	2.9333041-
14.250	2	2.9155570	2	1.3848901	6-	1.2799350-	7-	4.6919391-
14.500	2	3.6242765	1	9.9531270	7-	9.6078317-	7-	5.5852395-
14.750	2	4.3594153	1	4.0458441	7-	6.9227146-	7-	5.8524453-
15.000	2	5.0844028	1	4.2283895-	7-	4.7308289-	7-	5.6884234-
15.250	2	5.7499659	2	1.5205467-	7-	2.9947489-	7-	5.2474089-
15.500	2	6.2925720	2	2.9173212-	7-	1.6631672-	7-	4.6477956-
15.750	2	6.6332064	2	4.6335339-	8-	6.7854016-	7-	3.9773815-
16.000	2	6.6766806	2	6.6767351-	9-	1.7482710	7-	3.2985788-

Table 4A

Values of the Four M_{θ} Functions Appearing in the Formula for M_{θ}

x	$M_{\theta 1}$	$M_{\theta 2}$	$M_{\theta 3}$	$M_{\theta 4}$
0.050	1- 6.4999990-	4- 2.0625000	2 5.0897143	5 5.7040971-
0.100	1- 6.4999970-	4- 6.7499990	2 1.2700057	4 3.5649441-
0.150	1- 6.4999870-	3- 1.4962481	1 5.6266591	3 7.0410174-
0.200	1- 6.4999600-	3- 2.6689910	1 3.1511169	3 2.2271912-
0.250	1- 6.4999030-	3- 4.1662160	1 2.0054330	2 9.1177180-
0.300	1- 6.4998000-	3- 5.9998970	1 1.3832212	2 4.3932042-
0.350	1- 6.4996290-	3- 8.1669910	1 1.0081749	2 2.3682338-
0.400	1- 6.4993660-	2- 1.0665422	7.6487713	2 1.3856560-
0.450	1- 6.4989850-	2- 1.3499078	5.9818802	1 8.6292105-
0.500	1- 6.4984530-	2- 1.6666796	4.7906550	1 5.6435636-
0.550	1- 6.4977360-	2- 2.0165246	3.9103154	1 3.8392161-
0.600	1- 6.4967940-	2- 2.3997615	3.2417215	1 2.6974780-
0.650	1- 6.4955840-	2- 2.8163212	2.7223248	1 1.9469400-
0.700	1- 6.4940610-	2- 3.2661304	2.3110764	1 1.4374598-
0.750	1- 6.4921730-	2- 3.7491247	1.9801334	1 1.0820071-
0.800	1- 6.4898680-	2- 4.2654020	1.7100685	8.2808664-
0.850	1- 6.4870880-	2- 4.8148450	1.4869929	6.4292890-
0.900	1- 6.4837700-	2- 5.3974740	1.3007624	5.0545642-
0.950	1- 6.4798530-	2- 6.0131670	1.1438283	4.0175132-
1.000	1- 6.4752660-	2- 6.6618960	1.0104789	3.2240619-
1.050	1- 6.4699370-	2- 7.3436040	1- 8.9632800	2.6092916-
1.100	1- 6.4637910-	2- 8.0582040	1- 7.9796221	2.1275562-
1.150	1- 6.4567470-	2- 8.8056130	1- 7.1269239	1.7462178-
1.200	1- 6.4487240-	2- 9.5857390	1- 6.3837664	1.4415777-
1.250	1- 6.4396340-	1- 1.0398461	1- 5.7329230	1.1961886-
1.300	1- 6.4293860-	1- 1.1243622	1- 5.1604063	1- 9.9704020-
1.350	1- 6.4178900-	1- 1.2121094	1- 4.6547687	1- 8.3431790-
1.400	1- 6.4050440-	1- 1.3030731	1- 4.2065608	1- 7.0053590-
1.450	1- 6.3907480-	1- 1.3972301	1- 3.8079324	1- 5.8992950-
1.500	1- 6.3748990-	1- 1.4945637	1- 3.4523153	1- 4.9801712-
1.550	1- 6.3573910-	1- 1.5950500	1- 3.1341813	1- 4.2128582-
1.600	1- 6.3381100-	1- 1.6986609	1- 2.8488483	1- 3.5695887-
1.650	1- 6.3169400-	1- 1.8053719	1- 2.5923320	1- 3.0282630-
1.700	1- 6.2937660-	1- 1.9151522	1- 2.3612237	1- 2.5711625-
1.750	1- 6.2684660-	1- 2.0279650	1- 2.1525934	1- 2.1839948-
1.800	1- 6.2409170-	1- 2.1437774	1- 1.9639109	1- 1.8551559-
1.850	1- 6.2109880-	1- 2.2625477	1- 1.7929830	1- 1.5751759-
1.900	1- 6.1785490-	1- 2.3842333	1- 1.6378995	1- 1.3362814-
1.950	1- 6.1434710-	1- 2.5087864	1- 1.4969934	1- 1.1320635-
2.000	1- 6.1056120-	1- 2.6361575	1- 1.3688025	2- 9.5721080-
2.050	1- 6.0648350-	1- 2.7662907	1- 1.2520401	2- 8.0730220-
2.100	1- 6.0209970-	1- 2.8991279	1- 1.1455716	2- 6.7864290-
2.150	1- 5.9739540-	1- 3.0346052	1- 1.0483924	2- 5.6813510-
2.200	1- 5.9235580-	1- 3.1726555	2- 9.5961200	2- 4.7316720-
2.250	1- 5.8696600-	1- 3.3132058	2- 8.7843746	2- 3.9153330-

Table 4A (continued)

M ₀₁	M ₀₂	M ₀₃	M ₀₄
2.300	1- 3.4561773	2- 8.0416229	2- 3.2136530-
2.350	1- 3.6014873	2- 7.13615284	2- 2.6107340-
2.400	1- 3.7490477	2- 6.7384531	2- 2.0930080-
2.450	1- 3.8987647	2- 6.1672921	2- 1.6488850-
2.500	1- 4.0505372	2- 5.6434710	2- 1.2684400-
2.550	1- 4.2042590	2- 5.1628799	3- 9.4312200-
2.600	1- 4.3598180	2- 4.7217784	3- 6.6558950-
2.650	1- 4.5170950	2- 4.3168137	3- 4.2948790-
2.700	1- 4.6759640	2- 3.949147	3- 2.2934170-
2.750	1- 4.8362900	2- 3.6033387	4- 6.0409000-
2.800	1- 4.9979340	2- 3.2895472	4- 8.1445200
2.850	1- 5.1607490	2- 3.0012536	3- 1.9979510
2.900	1- 5.3245790	2- 2.67363909	3- 2.9774540
2.950	1- 5.4892580	2- 2.4930404	3- 3.7801990
3.000	1- 5.6546180	2- 2.2694714	3- 4.4298110
3.050	1- 5.8204750	2- 2.0640812	3- 4.9468650
3.100	1- 5.9866420	2- 1.8754362	3- 5.3494170
3.150	1- 6.1529230	2- 1.7021953	3- 5.66531510
3.200	1- 6.3191060	2- 1.5431325	3- 5.8718690
3.250	1- 6.4849800	2- 1.3971340	3- 6.0176560
3.300	1- 6.6503190	2- 1.2631732	3- 6.1010620
3.350	1- 6.8148830	2- 1.1403052	3- 6.1311970
3.400	1- 6.9784320	2- 1.0276543	3- 6.1162700
3.450	1- 7.1407080	3- 9.62441840	3- 6.0632550
3.500	1- 7.3014470	3- 8.62986780	3- 5.9783490
3.550	1- 7.4603730	3- 7.4331570	3- 5.8670110
3.600	1- 7.6171970	3- 6.6415620	3- 5.7338740
3.650	1- 7.7716260	3- 5.9177200	3- 5.5830480
3.700	1- 7.9233480	3- 5.2567940	3- 5.4181480
3.750	1- 8.0720460	3- 4.6535420	3- 5.2424060
3.800	1- 8.2173900	3- 4.1034890	3- 5.0583050
3.850	1- 8.3590370	3- 3.6025820	3- 4.8682920
3.900	1- 8.4966350	3- 3.1467490	3- 4.6744080
3.950	1- 8.6298200	3- 2.67325140	3- 4.4783900
4.000	1- 8.7582150	3- 2.3565970	3- 4.2817363
4.050	1- 8.8814320	3- 2.0158810	3- 4.0856958
4.100	1- 8.9990770	3- 1.7075770	3- 3.8913739
4.150	1- 9.1107380	3- 1.4290580	3- 3.6996535
4.200	1- 9.2159880	3- 1.1779510	3- 3.5113895
4.250	1- 9.3144000	4- 9.6190000	3- 3.3271585
4.300	1- 9.4055270	4- 7.4904500	3- 3.1474468
4.350	1- 9.4889120	4- 5.6731100	3- 2.9727352
4.400	1- 9.5640900	4- 4.0500200	3- 2.8033298
4.450	1- 9.6305820	4- 2.6041890	3- 2.6395131
4.500	1- 9.6878970	4- 1.3213960	3- 2.4814294

Table 4A (continued)

x	M ₀₁	M ₀₂	M ₀₃	M ₀₄
4.550	1- 3.0855000	1- 9.7355380	5- 1.8652300	3- 2.3292365
4.600	1- 3.4673160	1- 9.7722900	5- 8.1073300-	3- 2.1830712
4.650	1- 3.8576980	1- 9.7997380	4- 1.6856310-	3- 2.0428247
4.700	1- 4.2565290	1- 9.8152480	4- 2.4482140-	3- 1.9085979
4.750	1- 4.6636720	1- 9.8189800	4- 3.1060450-	3- 1.7803238
4.800	1- 5.0789670	1- 9.8103850	4- 3.6715270-	3- 1.6579590
4.850	1- 5.5022350	1- 9.7889050	4- 4.1517720-	3- 1.5415084
4.900	1- 5.9332720	1- 9.7539720	4- 4.5551740-	3- 1.4305573
4.950	1- 6.3718510	1- 9.7050130	4- 4.8888700-	3- 1.3252768
5.000	1- 6.8177210	1- 9.6441440	4- 5.1600400-	3- 1.2254634
5.100	1- 7.302110	1- 9.4681190	4- 5.5385370-	3- 1.0415633
5.200	1- 8.6682130	1- 9.2292130	4- 5.7347580-	4- 8.67732160
5.300	1- 9.6287600	1- 8.9198670	4- 5.7828140-	4- 7.3197780
5.400	1- 10.608403	1- 8.5351690	4- 5.7188930-	4- 6.0348740
5.500	1- 16.03188	1- 8.0701850	4- 5.5660080-	4- 4.9103430
5.600	1- 2.608632	1- 7.5199850	4- 5.3482350-	4- 3.9268340
5.700	1- 3.619687	1- 6.8796858	4- 5.0798160-	4- 3.0737460
5.800	1- 4.630713	1- 6.1444894	4- 4.7780700-	4- 2.3399780
5.900	1- 5.635452	1- 5.3097251	4- 4.4558150-	4- 1.7122630
6.000	1- 6.627010	1- 4.3708975	4- 4.1223390-	4- 1.1786160
6.100	1- 7.597820	1- 3.3237413	4- 3.7868510-	5- 7.3041100
6.200	1- 8.539632	1- 2.1642751	4- 3.4537060-	5- 3.5525100
6.300	1- 9.443494	2- 8.8887000	4- 3.1273390-	6- 4.8131000
6.400	2- 2.0299731	2- 5.0569300-	4- 2.8138365-	5- 2.0336100-
6.500	2- 1.097935	1- 2.0221370-	4- 2.5150727-	5- 4.0503500-
6.600	2- 1.826966	1- 3.6626360-	4- 2.2339152-	5- 5.6201000-
6.700	2- 2.474935	1- 5.4287070-	4- 1.9682837-	5- 6.7850100-
6.800	2- 3.029226	1- 7.3211450-	4- 1.7231423-	5- 7.6662940-
6.900	2- 3.476484	1- 9.3399160-	4- 1.4954405-	5- 8.2563810-
7.000	2- 3.802645	1- 1.1484077-	4- 1.2870184-	5- 8.5856360-
7.100	2- 3.992957	1- 3.751660-	4- 1.0952648-	5- 8.7715900-
7.200	2- 4.032013	1- 6.139585-	5- 9.2660670-	5- 8.7795580-
7.300	2- 3.903782	1- 8.643538-	5- 7.6856670-	5- 8.6889330-
7.400	2- 3.591673	2- 2.1257870-	5- 6.2964580-	5- 8.4183750-
7.500	2- 3.078587	2- 3.975471-	5- 5.1218190-	5- 8.1273340-
7.600	2- 2.346983	2- 6.787672-	5- 3.9764780-	5- 7.7236250-
7.700	2- 1.378992	2- 9.684113-	5- 2.9826990-	5- 7.4068210-
7.800	2- 0.156474	3- 2.652630-	5- 2.1749890-	5- 6.8432400-
7.900	1- 8.661158	3- 5.679110-	5- 1.4187660-	5- 6.3934590-
8.000	1- 6.874755	3- 8.747450-	6- 8.6846800-	5- 5.9636090-
8.100	1- 4.779111	4- 1.839310-	6- 3.4374200-	5- 5.4885550-
8.200	1- 2.356355	4- 4.934190-	7- 9.6620000	5- 5.0195080-
8.300	1- 9.5890770	4- 8.009080-	6- 4.6129600	5- 4.5619400-
8.400	1- 6.4605210	5- 5.1038570-	6- 7.5845800	5- 4.1201680-
8.500	1- 2.9547980	5- 3.994660-	6- 9.9575600	5- 3.6975090-

Table 4A (continued)

x	$M_{\theta 1}$	$M_{\theta 2}$	$M_{\theta 3}$	$M_{\theta 4}$
8.600	2- 9.4288400-	5.6846660-	5- 1.1803040	5- 3.2964170-
8.700	1- 5.2459730-	5.9561170-	5- 1.3186750	5- 2.9186095-
8.800	1- 9.9663030-	6.2102000-	5- 1.4169160	5- 2.5651797-
8.900	1.5113806-	6.4430060-	5- 1.4805550	5- 2.2366943-
9.000	2.0696180-	6.6503440-	5- 1.5146160	5- 1.9332809-
9.100	2.6718630-	6.8277360-	5- 1.5236490	5- 1.6547066-
9.200	3.3183410-	6.9704110-	5- 1.5117470	5- 1.4004454-
9.300	4.0089530-	7.0733190-	5- 1.4825720	5- 1.1697382-
9.400	4.7432390-	7.1311390-	5- 1.4393882	6- 9.6164438-
9.500	5.5203290-	7.1382760-	5- 1.3850817	6- 7.7508610-
9.600	6.3389050-	7.0888900-	5- 1.3221921	6- 6.0888750-
9.700	7.1971640-	6.9769030-	5- 1.2529396	6- 4.6180710-
9.800	8.0927580-	6.87960220-	5- 1.1792494	6- 3.3256610-
9.900	9.0227640-	6.85397720-	5- 1.1027812	6- 2.1987120-
10.000	9.9836240-	6.82015160-	5- 1.0249494	6- 1.2243380-
10.250	1.2491186-	4.9525855-	6- 8.3177280	7- 6.2639200
10.500	1.5076198-	3.0419677-	6- 6.5071700	6- 1.7887220
10.750	1.7618803-	3.6514960-	6- 4.8967170	6- 2.4288440
11.000	1.9961983-	3.1734430	6- 3.5231720	6- 2.6884270
11.250	2.1908003-	7.6519030	6- 2.3941927	6- 2.6839320
11.500	2.3216012-	1.3120348	6- 1.4983893	6- 2.5079240
11.750	2.3601335-	1.9588444	7- 8.61298820	6- 2.2315000
12.000	2.2737139-	2.7010930	7- 3.0943790	6- 1.9072850
12.250	2.0259166-	3.5271390	8- 4.2640100-	6- 1.57225617
12.500	1.5774375-	4.4164530	7- 2.7281450-	6- 1.2522797
12.750	8.8743554-	5.3377580	7- 4.0820730-	7- 9.6179280
13.000	8.4560100	6.2471530	7- 4.7260500-	7- 7.0924280
13.250	1.3760892	7.0863580	7- 4.8609960-	7- 4.9756070
13.500	3.0184680	7.7811640	7- 4.6509590-	7- 3.2609437
13.750	5.0327080	8.2403610	7- 4.2255150-	7- 1.9189370
14.000	7.4245990	8.3552750	7- 3.6835140-	8- 9.0689470
14.250	1.0178981	8.0002340	7- 3.0974610-	8- 1.7615080
14.500	1.3253235	7.0342420	7- 2.5180280-	8- 3.2285260-
14.750	1.6570163	5.3042143	7- 1.9783810-	8- 6.3718700-
15.000	2.0010390	2.6500972	7- 1.4980817-	8- 8.0937180-
15.250	2.3404716	1.0876880-	7- 1.0865133-	8- 8.7630650-
15.500	2.6526741	6.0581690-	8- 7.4574710-	8- 8.6890820-
15.750	2.9086457	1.2386738-	8- 4.72288460-	8- 8.1224620-
16.000	3.07225452	2.0158804-	8- 2.6190565-	8- 7.12597820-

Table 5A

Values of the Four W_i Functions Appearing in the Formula for dw/dy

x	W_1	W_2	W_3	W_4
0.050	4- 3.1249999-	7- 1.0000000	1- 3.1815380	2 5.0929500-
0.100	3- 1.2499997-	6- 1.0800000	1- 3.1768750	2 1.2732143-
0.150	3- 2.8124964-	6- 5.2300000	1- 3.1691510	1 5.6583471-
0.200	3- 4.9999789-	5- 1.6700000	1- 3.1584330	1 3.1823100-
0.250	3- 7.8124200-	5- 4.0680000	1- 3.1447930	1 2.0360611-
0.300	2- 1.1249763-	5- 8.4400000	1- 3.1283200	1 1.4132239-
0.350	2- 1.5311901-	4- 1.5632000	1- 3.1091090	1 1.0375040-
0.400	2- 1.9998666-	4- 2.6665000	1- 3.0872626	7.9349241-
0.450	2- 2.5309797-	4- 4.2712000	1- 3.0628884	6.2605723-
0.500	2- 3.1244914-	4- 6.5105000	1- 3.0360988	5.0616238-
0.550	2- 3.7803489-	4- 9.5314000	1- 3.0070089	4.1733580-
0.600	2- 4.4984814-	3- 1.3499100	1- 2.9757350	3.4966837-
0.650	2- 5.2787950-	3- 1.8592900	1- 2.9423977	2.9690940-
0.700	2- 6.1211700-	3- 2.5007900	1- 2.9071169	2.5495797-
0.750	2- 7.0254560-	3- 3.2953100	1- 2.8700115	2.2103319-
0.800	2- 7.9914670-	3- 4.2657600	1- 2.8312017	1.9319536-
0.850	2- 9.0189740-	3- 5.4360500	1- 2.7908075	1.7005826-
0.900	1- 1.0107702-	3- 6.8320700	1- 2.7489459	1.5060989-
0.950	1- 1.1257324-	3- 8.4809100	1- 2.7057335	1.3409757-
1.000	1- 1.2467453-	2- 1.0411240	1- 2.6612848	1.1995205-
1.050	1- 1.3737636-	2- 1.2653510	1- 2.6157120	1.0773639-
1.100	1- 1.5067347-	2- 1.5239430	1- 2.5691253	9.67110722-
1.150	1- 1.6455978-	2- 1.8202170	1- 2.5216327	8.7807502-
1.200	1- 1.7902835-	2- 2.1576690	1- 2.4733379	7.9613697-
1.250	1- 1.9407125-	2- 2.5399000	1- 2.4243430	7.2358055-
1.300	1- 2.0967955-	2- 2.9706800	1- 2.3747462	6.5901604-
1.350	1- 2.2584312-	2- 3.4539160	1- 2.3246434	6.0130615-
1.400	1- 2.4255061-	2- 3.9936610	1- 2.2741271	5.4951234-
1.450	1- 2.5978941-	2- 4.5940920	1- 2.2232857	5.0285514-
1.500	1- 2.7754538-	2- 5.2595380	1- 2.1722052	4.6068200-
1.550	1- 2.9580295-	2- 5.9944400	1- 2.1209673	4.2244386-
1.600	1- 3.1454490-	2- 6.8033740	1- 2.0696504	3.8767518-
1.650	1- 3.3375221-	2- 7.6910500	1- 2.0183302	3.5597961-
1.700	1- 3.5340410-	2- 8.6622860	1- 1.9670781	3.2701747-
1.750	1- 3.7347782-	2- 9.7220000	1- 1.9159627	3.0049668-
1.800	1- 3.9394849-	1- 1.0875257	1- 1.8650485	2.7616408-
1.850	1- 4.1478906-	1- 1.2127192	1- 1.8143973	2.5380009-
1.900	1- 4.3597021-	1- 1.3483057	1- 1.7640668	2.3321275-
1.950	1- 4.5746015-	1- 1.4948162	1- 1.7141121	2.1423410-
2.000	1- 4.7922247-	1- 1.6527946	1- 1.6645852	1.9671613-
2.050	1- 5.0122620-	1- 1.8227881	1- 1.6155340	1.8052817-
2.100	1- 5.2342550-	1- 2.0053535	1- 1.5670040	1.6555420-
2.150	1- 5.4577960-	1- 2.2010506	1- 1.5190362	1.5169137-
2.200	1- 5.6824250-	1- 2.4104461	1- 1.4716708	1.3884741-
2.250	1- 5.9076510-	1- 2.6341100	1- 1.4249441	1.2693977-

Table 5A (continued)

x	W_1'	W_2'	W_3'	W_4'
2.300	1- 6.1329500-	1- 2.8726127	1- 1.3788901	1- 1.1589460-
2.350	1- 6.3577660-	1- 3.1265273	1- 1.3335371	1- 1.0564505-
2.400	1- 6.5814990-	1- 3.3964276	1- 1.2889168	2- 9.6130680-
2.450	1- 6.8035180-	1- 3.6828844	1- 1.2450520	2- 8.7296700-
2.500	1- 7.0231540-	1- 3.9864666	1- 1.2019650	2- 7.9093634-
2.550	1- 7.2396910-	1- 4.3077379	1- 1.1596793	2- 7.1475891-
2.600	1- 7.4523800-	1- 4.6472559	1- 1.1182092	2- 6.4402164-
2.650	1- 7.6604200-	1- 5.0055698	1- 1.0775746	2- 5.7834599-
2.700	1- 7.8629770-	1- 5.3832220	1- 1.0377851	2- 5.1738266-
2.750	1- 8.0591640-	1- 5.7807367	2- 9.9885594	2- 4.6081549-
2.800	1- 8.2480470-	1- 6.1986319	2- 9.6079443	2- 4.0834586-
2.850	1- 8.4286500-	1- 6.6374056	2- 9.2360792	2- 3.5970131-
2.900	1- 8.5999410-	1- 7.0975359	2- 8.8730610	2- 3.1463490-
2.950	1- 8.7608420-	1- 7.5794829	2- 8.5189022	2- 2.7290785-
3.000	1- 8.9102230-	1- 8.0836847	2- 8.1736500	2- 2.3430467-
3.050	1- 9.0469050-	1- 8.6105499	2- 7.8372714	2- 1.9862530-
3.100	1- 9.1696520-	1- 9.1604613	2- 7.5098190	2- 1.6568087-
3.150	1- 9.2771740-	1- 9.7337682	2- 7.1912376	2- 1.3529897-
3.200	1- 9.3681270-	1.0330788	2- 6.8814923	2- 1.0731512-
3.250	1- 9.4411140-	1.0951797	2- 6.5805667	3- 8.1576230-
3.300	1- 9.4946780-	1.1597035	2- 6.2884040	3- 5.7938670-
3.350	1- 9.5273050-	1.2266693	2- 6.0049206	3- 3.6272920-
3.400	1- 9.5374280-	1.2960918	2- 5.7300500	3- 1.6448650-
3.450	1- 9.5234170-	1.3679803	2- 5.4636807	4- 1.6494900
3.500	1- 9.4835910-	1.4423388	2- 5.2057689	3- 1.8131430
3.550	1- 9.4162030-	1.5191652	2- 4.9561532	3- 3.3102750
3.600	1- 9.3194550-	1.5984510	2- 4.7148072	3- 4.6659330
3.650	1- 9.1914900-	1.6801814	2- 4.4814797	3- 5.8894370
3.700	1- 9.0303890-	1.7643337	2- 4.2561992	3- 6.9892410
3.750	1- 8.8341810-	1.8508786	2- 4.0387451	3- 7.9740930
3.800	1- 8.6008370-	1.9397778	2- 3.8289963	3- 8.8508260
3.850	1- 8.3282740-	2.0309845	2- 3.6268462	3- 9.6271750
3.900	1- 8.0143570-	2.1244435	2- 3.4320923	2- 1.0309831
3.950	1- 7.6568890-	2.2200896	2- 3.2446357	2- 1.0905161
4.000	1- 7.2536330-	2.3178479	2- 3.0643150	2- 1.1419550
4.050	1- 6.8022970-	2.4176323	2- 2.8909707	2- 1.1858268
4.100	1- 6.3005420-	2.5193463	2- 2.7244539	2- 1.2227127
4.150	1- 5.7459860-	2.6228814	2- 2.5645949	2- 1.2530899
4.200	1- 5.1361960-	2.7281169	2- 2.4112671	2- 1.2774624
4.250	1- 4.4687140-	2.8349196	2- 2.2642477	2- 1.2962718
4.300	1- 3.7410300-	2.9431424	2- 2.1234556	2- 1.3099307
4.350	1- 2.9506100-	3.0526252	2- 1.9886808	2- 1.3188731
4.400	1- 2.0948870-	3.1631926	2- 1.8597782	2- 1.3234464
4.450	1- 1.1712690-	3.2746544	2- 1.7365433	2- 1.3240329
4.500	2- 1.7714500-	3.3868044	2- 1.6188667	2- 1.3209578

Table 5A (continued)

x	W ₁	W ₂	W ₃	W ₄
4.550	2- 8.9011700	3.4994209	2- 1.5065258	2- 1.3145414
4.600	1- 2.0331560	3.6122264	2- 1.3995504	2- 1.3051035
4.650	1- 3.2546160	3.7250785	2- 1.2974831	2- 1.2928752
4.700	1- 4.5571390	3.8375881	2- 1.2003060	2- 1.2781432
4.750	1- 5.9433680	3.9494999	2- 1.1079932	2- 1.2611587
4.800	1- 7.4159280	4.0605006	2- 1.0201967	2- 1.2421513
4.850	1- 8.9774180	4.1702579	3- 9.13686237	2- 1.2213817
4.900	1.0630411	4.2784178	3- 8.5780184	2- 1.1989408
4.950	1.2377447	4.3846062	3- 7.8287950	2- 1.1750947
5.000	1.4221011	4.4884263	3- 7.1204568	2- 1.1500459
5.100	1.8207421	4.6872652	3- 5.8156933	2- 1.0969178
5.200	2.2608270	4.8713059	3- 4.6539566	2- 1.0406870
5.300	2.7440819	5.0365398	3- 3.6259820	3- 9.8244363
5.400	3.2720559	5.1785571	3- 2.67176915	3- 9.2313562
5.500	3.8460828	5.2925375	3- 1.9218344	3- 8.6340819
5.600	4.4672324	5.3732320	3- 1.2274989	3- 8.0407100
5.700	5.1362641	5.4149606	4- 6.12794510	3- 7.4549900
5.800	5.8535731	5.4115995	4- 1.1357350	3- 6.8816146
5.900	6.6191343	5.3565855	4- 3.2375080-	3- 6.3257795
6.000	7.4324398	5.2429082	4- 6.9203180-	3- 5.7900514
6.100	8.2924330	5.0631209	4- 9.9717240-	3- 5.12756268
6.200	9.1974418	4.8093482	3- 1.2468268-	3- 4.17856272
6.300	1.0145104	4.4733078	3- 1.4440421-	3- 4.3218405
6.400	1.1132284	4.0463256	3- 1.5990356-	3- 3.8801349
6.500	1.2155010	3.5193765	3- 1.7128222-	3- 3.4677493
6.600	1.3208367	2.8831085	3- 1.7941556-	3- 3.0800534
6.700	1.4286429	2.1279037	3- 1.8447078-	3- 2.7221690
6.800	1.5382160	1.2439261	3- 1.8673586-	3- 2.3869550
6.900	1.6487323	2.2119260	3- 1.8699890-	3- 2.0802364
7.000	1.7592396	9.5035260-	3- 1.8512484-	3- 1.7960144
7.100	1.8686466	2.2807368-	3- 1.8170045-	3- 1.5377459
7.200	1.9757151	3.7798751-	3- 1.7715191-	3- 1.3020992
7.300	2.0790497	5.4574299-	3- 1.7092279-	3- 1.0812151
7.400	2.1770901	7.3226999-	3- 1.6425931-	4- 8.9509289
7.500	2.2681011	9.3844549-	3- 1.5768967-	4- 7.1580472
7.600	2.3501666	1.1650784-	3- 1.4945229-	4- 5.6102606
7.700	2.4211806	1.4128913-	3- 1.4091138-	4- 4.1261919
7.800	2.4788418	1.6825000-	3- 1.3245563-	4- 3.0053173
7.900	2.5206474	1.9743916-	3- 1.2376410-	4- 1.9492047
8.000	2.5438893	2.2889036-	3- 1.1585922-	5- 9.5271990
8.100	2.5456524	2.6261940-	3- 1.0741637-	5- 1.4008980
8.200	2.5228116	2.9862180-	4- 9.9127414-	5- 5.5571400-
8.300	2.4720342	3.3686960-	4- 9.1051993-	4- 1.1448685-
8.400	2.3897826	3.7730842-	4- 8.3238921-	4- 1.6371006-
8.500	2.2723202	4.1985398-	4- 7.5727312-	4- 2.0416603-

Table 5A (continued)

x		w_1'		w_2'		w_3'		w_4'
8.600	1	2.1157198	1	4.6438872-	4-	6.8547626-	4-	2.3673021-
8.700	1	1.9158752	1	5.1075808-	4-	6.1722639-	4-	2.6222737-
8.800	1	1.6685171	1	5.5876669-	4-	5.5268346-	4-	2.8143112-
8.900	1	1.3692315	1	6.0817437-	4-	4.9194796-	4-	2.9506391-
9.000	1	1.0134834	1	6.5869200-	4-	4.3506860-	4-	3.0379765-
9.100		5.9664520	1	7.0997735-	4-	3.8204941-	4-	3.0825451-
9.200		1.1402890	1	7.6163076-	4-	3.3285612-	4-	3.0900824-
9.300		4.3907430-	1	8.1319078-	4-	2.8742211-	4-	3.0658565-
9.400	1	1.0673505-	1	8.6412990-	4-	2.4565367-	4-	3.0146839-
9.500	1	1.7754119-	1	9.1385000-	4-	2.0743487-	4-	2.9409482-
9.600	1	2.5677398-	1	9.6167850-	4-	1.7263187-	4-	2.8486203-
9.700	1	3.4486207-	2	1.0068641-	4-	1.4109679-	4-	2.7412808-
9.800	1	4.4220733-	2	1.0485723-	4-	1.1267114-	4-	2.6221407-
9.900	1	5.4917706-	2	1.0858830-	5-	8.7188910-	4-	2.4940645-
10.000	1	6.6609511-	2	1.1177861-	5-	6.4479228-	4-	2.3595921-
10.250	2	1.0035324-	2	1.1664163-	5-	1.8696298-	4-	2.0094282-
10.500	2	1.4069221-	2	1.1542504-	5-	1.3531621	4-	1.6602397-
10.750	2	1.8748345-	2	1.0576539-	5-	3.4768011	4-	1.3308232-
11.000	2	2.4007578-	1	8.4932700-	5-	4.7353799	4-	1.0328928-
11.250	2	2.9714928-	1	4.9873140-	5-	5.3352682	5-	7.7271536-
11.500	2	3.5653643-		2.7081080	5-	5.4528633	5-	5.5251217-
11.750	2	4.1503017-	1	7.6213308	5-	5.2346504	5-	3.7162872-
12.000	2	4.6818708-	2	1.7395663	5-	4.7988333	5-	2.2748484-
12.250	2	5.1013758-	2	2.9889521	5-	4.2379541	5-	1.1632525-
12.500	2	5.3341948-	2	4.5327582	5-	3.6220480	6-	3.3794512-
12.750	2	5.2885620-	2	6.3818771	5-	3.0019989	6-	2.4638320
13.000	2	4.8550649-	2	8.5301497	5-	2.4128552	6-	6.3380092
13.250	2	3.9071842-	3	1.0947861	5-	1.8769433	6-	8.6515346
13.500	2	2.3032663-	3	1.3574253	5-	1.4066771	6-	9.7687934
13.750	1	1.0962910	3	1.6309172	5-	1.0070120	5-	1.0004353
14.000	2	3.4895110	3	1.9004113	6-	6.7752497	6-	9.6216940
14.250	2	7.9903401	3	2.1453018	6-	4.1412722	6-	8.8350734
14.500	3	1.3749475	3	2.3383418	6-	2.1043515	6-	7.8134394
14.750	3	2.0871168	3	2.4448654	7-	5.8833400	6-	6.6855424
15.000	3	2.9405672	3	2.4222205	7-	4.8729475-	6-	5.5456011
15.250	3	3.9323633	3	2.2195356	6-	1.2017130-	6-	4.4590421
15.500	3	5.0485692	3	1.7779778	6-	1.6289283-	6-	3.4679837
15.750	3	6.2607453	3	1.0316810	6-	1.8354083-	6-	2.5962607
16.000	3	7.5220473	1	9.0443550-	6-	1.8788604-	6-	1.8538581

Table 6A
Values of the Four W Functions Appearing in the Formula for w

w	W_1	W_2	W_3	W_4
0.050	1.0000001	11- 2.0000000	1- 4.9980110-	2.2992567
0.100	1.0000015-	10- 9.0000000	1- 4.9920498-	1.8579886
0.150	1.0000079-	9- 9.9000000	1- 4.9821345-	1.5998734
0.200	1.0000250-	8- 5.5000000	1- 4.9682928-	1.4167574
0.250	1.0000611-	7- 2.1200000	1- 4.9505652-	1.2747539
0.300	1.0001265-	7- 6.3400000	1- 4.9290011-	1.1587742
0.350	1.0002344-	6- 1.5960000	1- 4.9036619-	1.0607757
0.400	1.0004000-	6- 3.5560000	1- 4.8746167-	9.7596218
0.450	1.0006407-	6- 7.2080000	1- 4.8419446-	9.0124435
0.500	1.0009765-	5- 1.3563000	1- 4.8057321-	8.3451662
0.550	1.0014296-	5- 2.4028000	1- 4.7660748-	7.7428060
0.600	1.0020247-	5- 4.0497000	1- 4.7230746-	7.1943268
0.650	1.0027885-	5- 6.5470000	1- 4.6768398-	6.6913710
0.700	1.0037504-	4- 1.0212000	1- 4.6274858-	6.22274676
0.750	1.0049419-	4- 1.5447000	1- 4.5751321-	5.7975018
0.800	1.0063966-	4- 2.2753000	1- 4.5199027-	5.3973652
0.850	1.0081509-	4- 3.2733000	1- 4.4619275-	5.0237121
0.900	1.0102428-	4- 4.6122000	1- 4.4013379-	4.6737801
0.950	1.0127131-	4- 6.3793000	1- 4.3382703-	4.3452646
1.000	1.0156047-	4- 8.6778000	1- 4.2728620-	4.0362212
1.050	1.0189622-	3- 1.1628300	1- 4.2052529-	3.7449951
1.100	1.0228329-	3- 1.5371100	1- 4.1355842-	3.4701658
1.150	1.0272660-	3- 2.0067600	1- 4.0639988-	3.2105046
1.200	1.0323125-	3- 2.5903200	1- 3.9906382-	2.9649390
1.250	1.0380257-	3- 3.3088500	1- 3.9156458-	2.7325283
1.300	1.044606-	3- 4.1861900	1- 3.8391641-	2.5124400
1.350	1.0516742-	3- 5.2492700	1- 3.7613345-	2.3039348
1.400	1.0597249-	3- 6.5282000	1- 3.6822972-	2.1063495
1.450	1.0686731-	3- 8.0566700	1- 3.6021915-	1.9190874
1.500	1.0785804-	3- 9.8720600	1- 3.5211543-	1.7416076
1.550	1.0895102-	2- 1.2015830	1- 3.4393208-	1.5734188
1.600	1.1015268-	2- 1.4533750	1- 3.3568231-	1.4140699
1.650	1.1146958-	2- 1.7476090	1- 3.2737915-	1.2631460
1.700	1.1290837-	2- 2.0898080	1- 3.1903526-	1.1202634
1.750	1.1447577-	2- 2.4860020	1- 3.1066309-	9.8506650
1.800	1.1617857-	2- 2.9427690	1- 3.0227456-	8.5722197
1.850	1.1802359-	2- 3.4672590	1- 2.9388148-	7.3641815
1.900	1.2001764-	2- 4.0672240	1- 2.8549510-	6.2236169
1.950	1.2216757-	2- 4.7510530	1- 2.7712639-	5.1477620
2.000	1.2448013-	2- 5.5277960	1- 2.6878592-	4.1339810
2.050	1.2696204-	2- 6.4072100	1- 2.6048391-	3.1797863
2.100	1.2961988-	2- 7.3997700	1- 2.5222993-	2.2827898
2.150	1.3246013-	2- 8.5167100	1- 2.4403344-	1.4407240
2.200	1.3548907-	2- 9.7700600	1- 2.3590320-	6.5140350
2.250	1.3871277-	1- 1.1172630	1- 2.2784770-	8.7277900-

Table 6A (continued)

x	w_1	w_2	w_3	w_4
2.300	1.4213707-	1- 1.2738120	1- 2.1987511-	3- 7.7733490-
2.350	1.4576746-	1- 1.4481130	1- 2.1199296-	2- 1.4207138-
2.400	1.4960911-	1- 1.6417110	1- 2.0420840-	2- 2.0192776-
2.450	1.5366677-	1- 1.8562470	1- 1.9652812-	2- 2.5748756-
2.500	1.5794477-	1- 2.0934610	1- 1.8895858-	2- 3.0892393-
2.550	1.6244688-	1- 2.3551850	1- 1.8150560-	2- 3.5641017-
2.600	1.6717633-	1- 2.6433590	1- 1.7417426-	2- 4.0011026-
2.650	1.7213574-	1- 2.9600260	1- 1.6697049-	2- 4.4018547-
2.700	1.7732692-	1- 3.3073300	1- 1.5989809-	2- 4.7679395-
2.750	1.8275097-	1- 3.6875300	1- 1.5296163-	2- 5.1008205-
2.800	1.8840818-	1- 4.1029890	1- 1.4616509-	2- 5.4020280-
2.850	1.9429783-	1- 4.5561830	1- 1.3951144-	2- 5.6729863-
2.900	2.0041825-	1- 5.0497020	1- 1.3300460-	2- 5.9150600-
2.950	2.0676662-	1- 5.5862460	1- 1.2664651-	2- 6.1296305-
3.000	2.1333896-	1- 6.1686320	1- 1.2043988-	2- 6.3180350-
3.050	2.2012999-	1- 6.7997940	1- 1.1438671-	2- 6.4815160-
3.100	2.2713303-	1- 7.4827760	1- 1.0848848-	2- 6.6213625-
3.150	2.3433997-	1- 8.2207370	1- 1.0274676-	2- 6.7387270-
3.200	2.4174106-	1- 9.0169530	2- 9.7162511-	2- 6.8348220-
3.250	2.4932487-	1- 9.8748110	2- 9.1736662-	2- 6.9108162-
3.300	2.5707815-	1.0797805	2- 8.6469363-	2- 6.9677960-
3.350	2.6498568-	1.1789541	2- 8.1360945-	2- 7.0067730-
3.400	2.7303028-	1.2853732	2- 7.6411184-	2- 7.0288700-
3.450	2.8119247-	1.3994186	2- 7.1619535-	2- 7.0350430-
3.500	2.8945053-	1.5214817	2- 6.6985915-	2- 7.0263575-
3.550	2.9778028-	1.6519628	2- 6.2509357-	2- 7.0036345-
3.600	3.0615494-	1.7912713	2- 5.8188558-	2- 6.9678700-
3.650	3.1454499-	1.9398245	2- 5.4022129-	2- 6.9199450-
3.700	3.2291811-	2.0980473	2- 5.0009121-	2- 6.8606565-
3.750	3.3123890-	2.2663712	2- 4.6147625-	2- 6.7908887-
3.800	3.3946881-	2.4452334	2- 4.2436050-	2- 6.7114300-
3.850	3.4756596-	2.6350772	2- 3.8871632-	2- 6.6229810-
3.900	3.5548500-	2.8363475	2- 3.5453245-	2- 6.5263105-
3.950	3.6317701-	3.0494934	2- 3.2178725-	2- 6.4221595-
4.000	3.7058914-	3.2749651	2- 2.9044500-	2- 6.3111500-
4.050	3.7766469-	3.5132126	2- 2.6049365-	2- 6.1939710-
4.100	3.8434281-	3.7646846	2- 2.3189500-	2- 6.0712380-
4.150	3.9055834-	4.0298268	2- 2.0462772-	2- 5.9435187-
4.200	3.9624179-	4.3090783	2- 1.7866870-	2- 5.8114120-
4.250	4.0131887-	4.6028742	2- 1.5398525-	2- 5.6754462-
4.300	4.0571067-	4.9116389	2- 1.3054460-	2- 5.5361065-
4.350	4.0933325-	5.2357858	2- 1.0831813-	2- 5.3939662-
4.400	4.1209768-	5.5757155	3- 8.7280400-	2- 5.2494380-
4.450	4.1390973-	5.9318136	3- 6.7396650-	2- 5.1029387-
4.500	4.1466964-	6.3044453	3- 4.8631750-	2- 4.9549300-

Table 6A (continued)

x	W_1	W_2	W_3	W_4
4.550	4.1427230-	6.6939552	3- 3.0958475-	2- 4.8057977-
4.600	4.1260669-	7.1006657	3- 1.4348100-	2- 4.6560970-
4.650	4.0955611-	7.5248691	4- 1.2424000	2- 4.5058002-
4.700	4.0499780-	7.9668285	3- 1.5831350	2- 4.3555295-
4.750	3.9880280-	8.4267727	3- 2.9460875	2- 4.2055687-
4.800	3.9083618-	8.9048920	3- 4.2156500	2- 4.0561220-
4.850	3.8095645-	9.4013350	3- 5.3947100	2- 3.9074962-
4.900	3.6901561-	9.9162053	3- 6.4887300	2- 3.7599620-
4.950	3.5485930-	1 1.0449557	3- 7.4976100	2- 3.6136950-
5.000	3.3832660-	1 1.1001386	3- 8.4260575	2- 3.4693565-
5.100	2.9745434-	1 1.2160172	2- 1.0054978	2- 3.1854685-
5.200	2.4497672-	1 1.3391272	2- 1.1402604	2- 2.9103220-
5.300	1.7936337-	1 1.4692205	2- 1.2481348	2- 2.6447607-
5.400	1- 9.8976830-	1 1.6059104	2- 1.3330286	2- 2.3898970-
5.500	2- 2.0741600-	1 1.7486532	2- 1.3953818	2- 2.1464275-
5.600	1.1318896	1 1.8967273	2- 1.4392168	2- 1.9152507-
5.700	2.4875291	1 2.0492111	2- 1.4654137	2- 1.6963749-
5.800	4.0664587	1 2.2049585	2- 1.4754778	2- 1.4902395-
5.900	5.8897387	1 2.3625752	2- 1.4720476	2- 1.2971738-
6.000	7.9790762	1 2.5203925	2- 1.4569627	2- 1.1168498-
6.100	1 1.0356662	1 2.6764400	2- 1.4308374	3- 9.4982955-
6.200	1 1.3044982	1 2.8284184	2- 1.3965602	3- 7.9508280-
6.300	1 1.6066572	1 2.9736712	2- 1.3544072	3- 6.5304625-
6.400	1 1.9443774	1 3.1091556	2- 1.3054338	3- 5.2263753-
6.500	1 2.3198378	1 3.2314112	2- 1.2525243	3- 4.0468069-
6.600	1 2.7351310	1 3.3365370	2- 1.1946724	3- 2.9758742-
6.700	1 3.1922178	1 3.4201568	2- 1.1339503	3- 2.0061442-
6.800	1 3.6928822	1 3.4773950	2- 1.0713133	3- 1.1526522-
6.900	1 4.2386792	1 3.5028535	2- 1.0077948	4- 3.8288060-
7.000	1 4.8308757	1 3.4905809	3- 9.4161287	4- 2.8721690
7.100	1 5.4703859	1 3.4340586	3- 8.7819457	4- 8.7855900
7.200	1 6.1577002	1 3.3261798	3- 8.1431776	3- 1.3750393
7.300	1 6.8928042	1 3.1592372	3- 7.5058300	3- 1.8053519
7.400	1 7.6750987	1 2.9249125	3- 6.8953111	3- 2.1688538
7.500	1 8.5033000	1 2.6142800	3- 6.2866245	3- 2.4657879
7.600	1 9.3753460	1 2.2177999	3- 5.6966736	3- 2.7196222
7.700	2 1.0288284	1 1.7253464	3- 5.1573821	3- 2.9114964
7.800	2 1.1238158	1 1.1262142	3- 4.6019927	3- 3.0382565
7.900	2 1.2219884	4.0916310	3- 4.1126623	3- 3.1453277
8.000	2 1.3227134	4.3754510-	3- 3.6381773	3- 3.1861103
8.100	2 1.4252177	1 1.4260845-	3- 3.1889108	3- 3.2076598
8.200	2 1.5285758	1 2.5689946-	3- 2.7681754	3- 3.1987834
8.300	2 1.6316943	1 3.8790907-	3- 2.3760465	3- 3.1633347
8.400	2 1.7332973	1 5.3693562-	3- 2.0123455	3- 3.1049197
8.500	2 1.8319101	1 7.0528157-	3- 1.6766726	3- 3.0268961

Table 6A (continued)

x	w_1	w_2	w_3	w_4
8.600	2 1.9258444	1 8.9423864-	3- 1.3684377	3- 2.9323748
8.700	2 2.0131829	2 1.1050706-	3- 1.0868878	3- 2.8242243
8.800	2 2.0917623	2 1.3389934-	4- 8.3113423	3- 2.7050750
8.900	2 2.1591599	2 1.5971531-	4- 6.0017646	3- 2.5773271
9.000	2 2.2126774	2 1.8806001-	4- 3.9292440	3- 2.4431575
9.100	2 2.2493283	2 2.1902611-	4- 2.0821868	3- 2.3045287
9.200	2 2.2658247	2 2.5269073-	5- 4.4849330	3- 2.1631986
9.300	2 2.2585657	2 2.8911195-	5- 9.8427820-	3- 2.0207308
9.400	2 2.2236288	2 3.2832499-	4- 2.2287619-	3- 1.8785041
9.500	2 2.1567621	2 3.7033790-	4- 3.2976519-	3- 1.7377247
9.600	2 2.0533804	2 4.1512710-	4- 4.2035856-	3- 1.5994360
9.700	2 1.9085632	2 4.6263232-	4- 4.9590418-	3- 1.4645305
9.800	2 1.7170584	2 5.1275124-	4- 5.5762527-	3- 1.3337601
9.900	2 1.4732874	2 5.6533382-	4- 6.0671288-	3- 1.2077477
10.000	2 1.1713582	2 6.2017604-	4- 6.4431951-	3- 1.0869970
10.250	1 1.2081440	2 7.6526522-	4- 6.9526467-	4- 8.1049441
10.500	2 1.4361288-	2 9.1652010-	4- 6.9720710-	4- 5.7275829
10.750	2 3.6097398-	3 1.0644577-	4- 6.6399616-	4- 3.7451515
11.000	2 6.5111959-	3 1.1954513-	4- 6.0728935-	4- 2.1433587
11.250	3 1.0243939-	3 1.2909280-	4- 5.3659666-	5- 8.9315060
11.500	3 1.4891695-	3 1.3265998-	4- 4.5941848-	6- 4.3680990-
11.750	3 2.0502610-	3 1.2718062-	4- 3.8144369-	5- 7.1001746-
12.000	3 2.7069013-	3 1.0890715-	4- 3.0678137-	4- 1.1499651-
12.250	3 3.4502456-	2 7.3401120-	4- 2.3820520-	4- 1.4063202-
12.500	3 4.2603892-	2 1.5575064-	4- 1.7739504-	4- 1.5188153-
12.750	3 5.1029185-	2 7.0194072	4- 1.2516436-	4- 1.5230145-
13.000	3 5.9250608-	3 1.8985730	5- 8.1666246-	4- 1.4497294-
13.250	3 6.6515597-	3 3.4936522	5- 4.6573877-	4- 1.3248355-
13.500	3 7.1804810-	3 5.5419105	5- 1.9233642-	4- 1.1693897-
13.750	3 7.3792551-	3 8.0867596	6- 1.2089606	5- 9.9995178-
14.000	3 7.0813761-	4 1.1151688	5- 1.5709230	5- 8.2904108-
14.250	3 6.0843171-	4 1.4729368	5- 2.5246613	5- 6.6566453-
14.500	3 4.1493710-	4 1.8768292	5- 3.0768690	5- 5.1586941-
14.750	3 1.0042978-	4 2.3156922	5- 3.3152779	5- 3.8328781-
15.000	3 3.6501695	4 2.7705456	5- 3.3181916	5- 2.6964556-
15.250	4 1.0128756	4 3.2125621	5- 3.1532534	5- 1.7522199-
15.500	4 1.8743650	4 3.6009179	5- 2.8770916	6- 9.9250820-
15.750	4 2.9778643	4 3.8806311	5- 2.5356287	6- 4.0258195-
16.000	4 4.3453912	4 3.9805479	5- 2.1648260	7- 3.6596610

Table 7A
Values of the Four V_n Functions Appearing in the Formula for v

x	V_1	V_2	V_3	V_4
0.050	1- 9.9999990-	4- 2.1875000	2 6.6158514	2.3948588
0.100	1- 9.9999980-	4- 8.7500000	2 1.6502330	1.9539152
0.150	1- 9.9999890-	3- 1.9687496	1 7.3069303	1.6963326
0.200	1- 9.9999670-	3- 3.4999994	1 4.0887392	1.5139491
0.250	1- 9.9999180-	3- 5.4687480	1 2.5993714	1.3728655
0.300	1- 9.9998310-	3- 7.8749920	1 1.7905204	1.2579814
0.350	1- 9.9996870-	2- 1.0718730	1 1.3029892	1.1612401
0.400	1- 9.9994660-	2- 1.3999955	9.8673482	1.0778315
0.450	1- 9.9991460-	2- 1.7718659	7.7007582	1.0046514
0.500	1- 9.9986980-	2- 2.1874831	6.1525687	1- 9.3957930
0.550	1- 9.9980930-	2- 2.6468450	5.0085691	1- 8.8110180
0.600	1- 9.9973000-	2- 3.1499490	4.1398757	1- 8.2809985
0.650	1- 9.9962810-	2- 3.6967931	3.4651727	1- 7.7972310
0.700	1- 9.9949980-	2- 4.2873722	2.9310967	1- 7.3530964
0.750	1- 9.9934080-	2- 4.9216822	2.5014511	1- 6.9433349
0.800	1- 9.9914670-	2- 5.5997150	2.1509787	1- 6.5636992
0.850	1- 9.9891240-	2- 6.3214650	1.8616228	1- 6.2107087
0.900	1- 9.9863300-	2- 7.0869230	1.6201947	1- 5.8814704
0.950	1- 9.9830300-	2- 7.8960770	1.4168803	1- 5.5735547
1.000	1- 9.9791640-	2- 8.7489150	1.2442533	1- 5.2848986
1.050	1- 9.9746730-	2- 9.6454200	1.0966101	1- 5.0137342
1.100	1- 9.9694920-	1- 1.0585576	1- 9.6951183	1- 4.7585350
1.150	1- 9.9635530-	1- 1.1569363	1- 8.5946167	1- 4.5179727
1.200	1- 9.9567880-	1- 1.2596756	1- 7.6367387	1- 4.2908802
1.250	1- 9.9491210-	1- 1.3667732	1- 6.7990763	1- 4.0762309
1.300	1- 9.9404750-	1- 1.4782253	1- 6.0634350	1- 3.8731114
1.350	1- 9.9307720-	1- 1.5940294	1- 5.4149188	1- 3.6807091
1.400	1- 9.9199270-	1- 1.7141813	1- 4.8412309	1- 3.4982946
1.450	1- 9.9078520-	1- 1.8386764	1- 4.3321542	1- 3.3252097
1.500	1- 9.8944600-	1- 1.9675105	1- 3.8791363	1- 3.1608607
1.550	1- 9.8796590-	1- 2.1006780	1- 3.4749799	1- 3.0047073
1.600	1- 9.8633510-	1- 2.2381732	1- 3.1135858	1- 2.8562568
1.650	1- 9.8454340-	1- 2.3799892	1- 2.7897626	1- 2.7150588
1.700	1- 9.8258080-	1- 2.5261193	1- 2.4990661	1- 2.5806998
1.750	1- 9.8043680-	1- 2.6765554	1- 2.2376777	1- 2.4527992
1.800	1- 9.7810020-	1- 2.8312890	1- 2.0022947	1- 2.3310049
1.850	1- 9.7555970-	1- 2.9903110	1- 1.7900554	1- 2.2149916
1.900	1- 9.7280380-	1- 3.1536104	1- 1.5984658	1- 2.1044566
1.950	1- 9.6982050-	1- 3.3211767	1- 1.4253485	1- 1.9991189
2.000	1- 9.6659740-	1- 3.4929978	1- 1.2687911	1- 1.8987161
2.050	1- 9.6312190-	1- 3.6690601	1- 1.1271116	1- 1.8030035
2.100	1- 9.5938090-	1- 3.8493496	2- 9.9882420	1- 1.7117510
2.150	1- 9.5536100-	1- 4.0338505	2- 8.8261521	1- 1.6247421
2.200	1- 9.5104850-	1- 4.2225475	2- 7.7731632	1- 1.5417757
2.250	1- 9.4642920-	1- 4.4154215	2- 6.8188678	1- 1.4626610

000 039

Table 7A (continued)

x	V ₁	V ₂	V ₃	V ₄
2.300	1- 9.414850-	1- 4.6124537	2- 5.9540041	1- 1.3872184
2.350	1- 9.3621170-	1- 4.8136219	2- 5.1702569	1- 1.3152768
2.400	1- 9.3058340-	1- 5.0189060	2- 4.4602053	1- 1.2466789
2.450	1- 9.2458790-	1- 5.2282813	2- 3.8171320	1- 1.1812705
2.500	1- 9.1820910-	1- 5.4417211	2- 3.2350354	1- 1.1189076
2.550	1- 9.1143040-	1- 5.6591990	2- 2.7084728	1- 1.0594558
2.600	1- 9.0423535-	1- 5.8806840	2- 2.2325403	1- 1.0027814
2.650	1- 8.9660604-	1- 6.1061480	2- 1.8027889	2- 9.4876703
2.700	1- 8.8852511-	1- 6.3355540	2- 1.4151776	2- 8.89728953
2.750	1- 8.7997397-	1- 6.5688640	2- 1.0660974	2- 8.4824041
2.800	1- 8.7093425-	1- 6.8060430	3- 7.5216610	2- 8.0151275
2.850	1- 8.6138681-	1- 7.0470490	3- 4.7036710	2- 7.5700328
2.900	1- 8.5131181-	1- 7.2918390	3- 2.1797370	2- 7.1461893
2.950	1- 8.4068929-	1- 7.5403640	5- 7.5680000-	2- 6.7426425
3.000	1- 8.2949877-	1- 7.7925770	3- 2.0855930-	2- 6.3585250
3.050	1- 8.1771902-	1- 8.0484220	3- 3.68710120-	2- 5.9929729
3.100	1- 8.0532848-	1- 8.3078420	3- 5.4511870-	2- 5.6451947
3.150	1- 7.9230501-	1- 8.5707790	3- 6.8436340-	2- 5.3144088
3.200	1- 7.7862595-	1- 8.8371670	3- 8.0647340-	2- 4.9998700
3.250	1- 7.6426805-	1- 9.1069390	3- 9.1293900-	2- 4.7008867
3.300	1- 7.4920753-	1- 9.3800210	2- 1.0051173-	2- 4.4167751
3.350	1- 7.3341993-	1- 9.6563350	2- 1.0842320-	2- 4.1468768
3.400	1- 7.1688035-	1- 9.9358020	2- 1.1514776-	2- 3.8905750
3.450	1- 6.9956320-	1- 1.0218332	2- 1.2078934-	2- 3.6472549
3.500	1- 6.8144228-	1- 1.0503832	2- 1.2544686-	2- 3.4163695
3.550	1- 6.6249079-	1- 1.0792205	2- 1.2920857-	2- 3.1973592
3.600	1- 6.4268108-	1- 1.083344	2- 1.3215613-	2- 2.9897094
3.650	1- 6.2198517-	1- 1.1377139	2- 1.3436968-	2- 2.7928637
3.700	1- 6.0037405-	1- 1.1673472	2- 1.3591313-	2- 2.6064089
3.750	1- 5.7781833-	1- 1.1972217	2- 1.3685721-	2- 2.4298486
3.800	1- 5.5428781-	1- 1.2273243	2- 1.3725774-	2- 2.2627252
3.850	1- 5.2975115-	1- 1.2576406	2- 1.3716828-	2- 2.1046201
3.900	1- 5.0417710-	1- 1.2881556	2- 1.3664180-	2- 1.9551200
3.950	1- 4.7753297-	1- 1.3188538	2- 1.3572409-	2- 1.8138464
4.000	1- 4.4978568-	1- 1.3497180	2- 1.3445715-	2- 1.6803995
4.050	1- 4.2090109-	1- 1.3807304	2- 1.3288048-	2- 1.5544320
4.100	1- 3.9084448-	1- 1.4118722	2- 1.3103065-	2- 1.4355801
4.150	1- 3.5958024-	1- 1.4431232	2- 1.2893968-	2- 1.3235134
4.200	1- 3.2707217-	1- 1.4744623	2- 1.2663911-	2- 1.2179373
4.250	1- 2.9328290-	1- 1.5058669	2- 1.2415733-	2- 1.1185120
4.300	1- 2.5817430-	1- 1.5373132	2- 1.2151699-	2- 1.0249623
4.350	1- 2.2170790-	1- 1.5687758	2- 1.1874550-	3- 9.3699504
4.400	1- 1.8384380-	1- 1.6002285	2- 1.1586203-	3- 8.5435163
4.450	1- 1.4454130-	1- 1.6316427	2- 1.1288728-	3- 7.7675623
4.500	1- 1.0375930-	1- 1.6629884	2- 1.0983851-	3- 7.0396666

%	V ₁	V ₂	V ₃	V ₄
4.550	2- 6.145600-	1.6942344	2- 1.0673339-	3- 6.3573357
4.600	2- 1.7586900-	1.7253470	2- 1.0358745-	3- 5.7189556
4.650	2- 2.7890400	1.7562910	2- 1.0041077-	3- 5.1211805
4.700	2- 7.5021000	1.7870289	3- 9.7219613-	3- 4.5625774
4.750	1- 1.2385060	1.8175216	3- 9.4022127-	3- 4.0414110
4.800	1- 1.7442530	1.8477275	3- 9.0830373-	3- 3.552567
4.850	1- 2.2679210	1.8776026	3- 8.7653820-	3- 3.1027108
4.900	1- 2.8099920	1.9071003	3- 8.4497204-	3- 2.6813239
4.950	1- 3.3709480	1.9361720	3- 8.1370012-	3- 2.2901334
5.000	1- 3.9512820	1.9647661	3- 7.8284549-	3- 1.9275105
5.100	1- 5.1720910	2.0203014	3- 7.2238143-	3- 1.2804463
5.200	1- 6.4764840	2.0732352	3- 6.6400425-	4- 7.2847760
5.300	1- 7.8686150	2.1230461	3- 6.0797240-	4- 2.6340090
5.400	1- 9.3526970	2.1691562	3- 5.5455651-	4- 1.2777730-
5.500	1- 1.0932981	2.2109275	3- 5.0385236-	4- 4.5062780-
5.600	1.2613747	2.2476552	3- 4.5602850-	4- 7.1587410-
5.700	1.4399241	2.2785639	3- 4.1101575-	4- 9.2861340-
5.800	1.6293655	2.3028004	3- 3.6886850-	3- 1.0952221-
5.900	1.8301052	2.3194292	3- 3.2296201-	3- 1.2224528-
6.000	2.04225354	2.3274253	3- 2.9317128-	3- 1.3158621-
6.100	2.2670240	2.3256681	3- 2.5948525-	3- 1.3789595-
6.200	2.5039097	2.3129350	3- 2.2841906-	3- 1.4175940-
6.300	2.7534926	2.2878971	3- 1.9994236-	3- 1.4334750-
6.400	3.0160260	2.2491066	3- 1.7376224-	3- 1.4316428-
6.500	3.2917018	2.1950013	3- 1.5003074-	3- 1.4149095-
6.600	3.5806471	2.1238856	3- 1.2842318-	3- 1.3855273-
6.700	3.8829021	2.0339350	3- 1.0892017-	3- 1.3455607-
6.800	4.1984115	1.9231857	4- 9.1354945-	3- 1.2975467-
6.900	4.5270071	1.7895296	4- 7.5596364-	3- 1.2440133-
7.000	4.8683883	1.6307125	4- 6.1519171-	3- 1.1836604-
7.100	5.2221035	1.4443281	4- 4.8999649-	3- 1.1221990-
7.200	5.5875333	1.2278162	4- 3.8055231-	3- 1.0585391-
7.300	5.9638610	9.7846350	4- 2.8119534-	4- 9.9176598-
7.400	6.3500529	6.9340000	4- 1.9844507-	4- 9.2595070-
7.500	6.7448306	3.6960400	4- 1.2382068-	4- 8.6275072-
7.600	7.1466383	3.9045000	5- 5.9359850-	4- 7.9646624-
7.700	7.5536222	4.0701300-	6- 1.3887000-	4- 7.3458205-
7.800	7.9635868	8.6659700-	5- 4.0538180	4- 6.7157881-
7.900	8.3739657	1.3784180-	5- 7.9319230	4- 6.1355772-
8.000	8.7817903	1.9461630-	4- 1.1143083	4- 5.6025846-
8.100	9.1836414	2.5735990-	4- 1.3714410	4- 5.0719377-
8.200	9.5756184	3.2645690-	4- 1.5748715	4- 4.5698552-
8.300	9.9532940	4.0229570-	4- 1.7308135	4- 4.0970979-
8.400	1.0311671	4.8526560-	4- 1.8449934	4- 3.6540095-
8.500	1.0645144	5.7575380-	4- 1.9226705	4- 3.2405786-

Table 7A (continued)

Table 7A (continued)

x		V_1		V_2		V_3		V_4
8.600	1	1.0947449		6.7414040-	4-	1.9686575	4-	2.8564943-
8.700	1	1.1211619		7.8079410-	4-	1.9873425	4-	2.5011965-
8.800	1	1.1429946		8.9606660-	4-	1.9827120	4-	2.1739199-
8.900	1	1.1593927	1	1.0202859-	4-	1.9583735	4-	1.8737341-
9.000	1	1.1694231	1	1.1537498-	4-	1.9175786	4-	1.5995779-
9.100	1	1.1720644	1	1.2967183-	4-	1.8632461	4-	1.3502902-
9.200	1	1.1662046	1	1.4494039-	4-	1.7979838	4-	1.1246372-
9.300	1	1.1506359	1	1.6119627-	4-	1.7241115	5-	9.2133553-
9.400	1	1.1240524	1	1.7844841-	4-	1.6436816	5-	7.3907263-
9.500	1	1.0850471	1	1.9669781-	4-	1.5585002	5-	5.7652426-
9.600	1	1.0321100	1	2.1593633-	4-	1.4701466	5-	4.3236933-
9.700		9.6362620	1	2.3614537-	4-	1.3799929	5-	3.0530251-
9.800		8.7787560	1	2.5729421-	4-	1.2892212	5-	1.9404462-
9.900		7.7303340	1	2.7933865-	4-	1.1988416	6-	9.7351400-
10.000		6.4717230	1	3.0221905-	4-	1.1097080	6-	1.4020350-
10.250		2.2701850	1	3.6252613-	5-	8.9669511	5-	1.4330042
10.500		3.7160300-	1	4.2576124-	5-	7.0352225	5-	2.4076834
10.750	1	1.1857744-	1	4.8920125-	5-	5.3439070	5-	2.9274862
11.000	1	2.2541893-	1	5.4893308-	5-	3.9078058	5-	3.1134779
11.250	1	3.6151508-	1	5.9960553-	5-	2.7227617	5-	3.0650625
11.500	1	5.3037145-	1	6.3417550-	5-	1.7721725	5-	2.8617603
11.750	1	7.3478142-	1	6.4366430-	5-	1.0320082	5-	2.5654577
12.000	1	9.7631994-	1	6.1694660-	6-	4.7456498	5-	2.2228555
12.250	2	1.2547044-	1	5.4060140-	7-	7.1177230	5-	1.8679235
12.500	2	1.5670107-	1	3.9886410-	6-	2.0591163-	5-	1.5242276
12.750	2	1.9067384-	1	1.7372400-	6-	3.8234029-	5-	1.2070515
13.000	2	2.2627284-	1	1.5477200	6-	4.8092960-	6-	9.2526805
13.250	2	2.6179464-	1	6.0794860	6-	5.2136213-	6-	6.8294287
13.500	2	2.9481655-	2	1.2075808	6-	5.2013410-	6-	4.8067359
13.750	2	3.2205941-	2	1.9745509	6-	4.9069367-	6-	3.1668028
14.000	2	3.3925349-	2	2.9269874	6-	4.4369771-	6-	1.8766973
14.250	2	3.4101708-	2	4.0778047	6-	3.8733536-	7-	8.9501340
14.500	2	3.2076409-	2	5.4315631	6-	3.2767903-	7-	1.7683682
14.750	2	2.7065721-	2	6.9805857	6-	2.6903624-	7-	3.2270228-
15.000	2	1.8163217-	2	8.7002945	6-	2.1428273-	7-	6.4601882-
15.250	1	4.3519350-	3	1.0543770	6-	1.6516558-	7-	8.3156894-
15.500	2	1.5470250	3	1.2435601	6-	1.2256962-	7-	9.1304030-
15.750	2	4.2448430	3	1.4265153	7-	8.6744936-	7-	9.1905539-
16.000	2	7.7707351	3	1.5879514	7-	5.7495918-	7-	8.7323943-

Table 8A
Values of the Four Auxiliary K-Functions

x		K_1		K_2		K_3		K_4
0.050	3	1.6000000	6	1.7920000		7.3777589-		7.6777589-
0.100	2	4.0000000	5	1.1200000		5.9914645-		6.2914645-
0.150	2	1.7777778	4	2.2123457		5.1805343-		5.4805343-
0.200	2	1.0000000	3	7.0000000		4.6051701-		4.9051701-
0.250	1	6.4000000	3	2.8672000		4.1588830-		4.4588830-
0.300	1	4.4444444	3	1.3827160		3.7942399-		4.0942399-
0.350	1	3.2653061	2	7.4635568		3.4859386-		3.7859386-
0.400	1	2.5000000	2	4.3750000		3.2188758-		3.5188758-
0.450	1	1.9753086	2	2.7312908		2.9833097-		3.2833097-
0.500	1	1.6000000	2	1.7920000		2.7725887-		3.0725887-
0.550	1	1.3223140	2	1.2239600		2.5819683-		2.8819683-
0.600	1	1.1111111	1	8.6419746		2.4079456-		2.7079456-
0.650		9.4674556	1	6.2742901		2.2478601-		2.5478601-
0.700		8.1632653	1	4.6647230		2.0996442-		2.3996442-
0.750		7.1111111	1	3.5397531		1.9616585-		2.2616585-
0.800		6.2500000	1	2.7343750		1.8325814-		2.1325814-
0.850		5.5363322	1	2.1455682		1.7113322-		2.0113322-
0.900		4.9382716	1	1.7070568		1.5970153-		1.8970153-
0.950		4.4321330	1	1.3750662		1.4888809-		1.7888809-
1.000		4.0000000	1	1.1200000		1.3862943-		1.6862943-
1.050		3.6281179		9.2142673		1.2887140-		1.5887140-
1.100		3.3057851		7.6497505		1.1956739-		1.4956739-
1.150		3.0245747		6.4036365		1.1067704-		1.4067704-
1.200		2.7777778		5.4012347		1.0216512-		1.3216512-
1.250		2.5600000		4.5875200	1-	9.4000725-		1.2400073-
1.300		2.3668639		3.9214313	1-	8.6156582-		1.1615658-
1.350		2.1947874		3.3719642	1-	7.8608517-		1.0860852-
1.400		2.0408163		2.9154518	1-	7.1334988-		1.0133499-
1.450		1.9024970		2.5336464	1-	6.4316724-	1-	9.4316724-
1.500		1.7777778		2.2123457	1-	5.7536414-	1-	8.7536414-
1.550		1.6649324		1.9403999	1-	5.0978449-	1-	8.0978449-
1.600		1.5625000		1.7089843	1-	4.4628709-	1-	7.4628709-
1.650		1.4692378		1.5110618	1-	3.8474378-	1-	6.8474378-
1.700		1.3840830		1.3409800	1-	3.2503785-	1-	6.2503785-
1.750		1.3061224		1.1941690	1-	2.6706278-	1-	5.6706278-
1.800		1.2345679		1.0669105	1-	2.1072102-	1-	5.1072102-
1.850		1.1687363	1-	9.5616115	1-	1.5592307-	1-	4.5592307-
1.900		1.1080332	1-	8.5941625	1-	1.0258658-	1-	4.0258658-
1.950		1.0519395	1-	7.7460369	2-	5.0635614-	1-	3.5063561-
2.000		1.0000000	1-	7.0000000			1-	3.0000000-
2.050	1-	9.5181440	1-	6.3416546	2-	4.9385227	1-	2.5061477-
2.100	1-	9.0702948	1-	5.7589174	2-	9.7580334	1-	2.0241967-
2.150	1-	8.6533261	1-	5.2416037	1-	1.4464132	1-	1.5535868-
2.200	1-	8.2644628	1-	4.7810942	1-	1.9062036	1-	1.0937964-
2.250	1-	7.9012346	1-	4.3700656	1-	2.3556607	2-	6.4433930-

Table 8A (continued)

x	K_1	K_2	K_3	K_4
2.300	1- 7.5614367	1- 4.0022728	1- 2.7952388	2- 2.0476120-
2.350	1- 7.2430964	1- 3.6723712	1- 3.2253629	2- 2.2536290
2.400	1- 6.9444444	1- 3.3757716	1- 3.6464311	2- 6.4643110
2.450	1- 6.6638900	1- 3.1085201	1- 4.0588169	1- 1.0588169
2.500	1- 6.4000000	1- 2.8672000	1- 4.4628710	1- 1.4628710
2.550	1- 6.1514802	1- 2.6488496	1- 4.8589236	1- 1.8589236
2.600	1- 5.9171598	1- 2.4508946	1- 5.2472853	1- 2.2472853
2.650	1- 5.6959772	1- 2.2710909	1- 5.6282492	1- 2.6282492
2.700	1- 5.4869684	1- 2.1074775	1- 6.0020918	1- 3.0020918
2.750	1- 5.2892562	1- 1.9583362	1- 6.3690746	1- 3.3690746
2.800	1- 5.1020408	1- 1.8221574	1- 6.7294447	1- 3.7294447
2.850	1- 4.9245922	1- 1.6976126	1- 7.0834363	1- 4.0834363
2.900	1- 4.7562426	1- 1.5835291	1- 7.4312711	1- 4.4312711
2.950	1- 4.5963804	1- 1.4788699	1- 7.7731598	1- 4.7731598
3.000	1- 4.4444444	1- 1.3827160	1- 8.1093022	1- 5.1093022
3.050	1- 4.2999194	1- 1.2942515	1- 8.4398882	1- 5.4398882
3.100	1- 4.1623309	1- 1.2127499	1- 8.7650986	1- 5.7650986
3.150	1- 4.0312421	1- 1.1375639	1- 9.0851055	1- 6.0851055
3.200	1- 3.9062500	1- 1.0681152	1- 9.4000726	1- 6.4000726
3.250	1- 3.7869822	1- 1.0038864	1- 9.7101563	1- 6.7101563
3.300	1- 3.6730946	2- 9.4441368	1.0015505	1- 7.0155050
3.350	1- 3.5642682	2- 8.8928056	1.0316263	1- 7.3162630
3.400	1- 3.4602076	2- 8.3811259	1.0612565	1- 7.6125650
3.450	1- 3.3606385	2- 7.9057237	1.0904541	1- 7.9045410
3.500	1- 3.2653061	2- 7.4635568	1.1192315	1- 8.1923150
3.550	1- 3.1739734	2- 7.0518749	1.1476008	1- 8.4760080
3.600	1- 3.0864198	2- 6.6681910	1.1755733	1- 8.7557330
3.650	1- 3.0024395	2- 6.3102500	1.2031599	1- 9.0315990
3.700	1- 2.9218408	2- 5.9760075	1.2303712	1- 9.3037120
3.750	1- 2.8444444	2- 5.6636047	1.2572173	1- 9.5721730
3.800	1- 2.7700831	2- 5.3713522	1.2837077	1- 9.8370770
3.850	1- 2.6986001	2- 5.0977097	1.3098519	1.0098519
3.900	1- 2.6298488	2- 4.8412733	1.3356587	1.0356587
3.950	1- 2.5636917	2- 4.6007606	1.3611368	1.0611368
4.000	1- 2.5000000	2- 4.3750000	1.3862943	1.0862943
4.050	1- 2.4386526	2- 4.1629186	1.4111394	1.1111394
4.100	1- 2.3795360	2- 3.9635341	1.4356795	1.1356795
4.150	1- 2.3225432	2- 3.7759448	1.4599223	1.1599223
4.200	1- 2.2675737	2- 3.5993233	1.4838746	1.1838746
4.250	1- 2.2145329	2- 3.4329091	1.5075436	1.2075436
4.300	1- 2.1633315	2- 3.2760022	1.5309356	1.2309356
4.350	1- 2.1138856	2- 3.1279586	1.5540573	1.2540573
4.400	1- 2.0661157	2- 2.9881838	1.5769147	1.2769147
4.450	1- 2.0199470	2- 2.8561301	1.5995138	1.2995138
4.500	1- 1.9753086	2- 2.7312908	1.6218604	1.3218604

Table 8A (continued)

x	K_1	K_2	K_3	K_4
4.550	1- 1.9321338	2- 2.6131987	1.6439601	1.3439601
4.600	1- 1.8903592	2- 2.5014205	1.6658182	1.3658182
4.650	1- 1.8499248	2- 2.3955552	1.6874400	1.3874400
4.700	1- 1.8107741	2- 2.2952320	1.7088306	1.4088306
4.750	1- 1.7728532	2- 2.2001059	1.7299948	1.4299948
4.800	1- 1.7361111	2- 2.1098572	1.7509374	1.4509374
4.850	1- 1.7004995	2- 2.0241890	1.7716630	1.4716630
4.900	1- 1.6659725	2- 1.9428250	1.7921760	1.4921760
4.950	1- 1.6324865	2- 1.8655085	1.8124807	1.5124807
5.000	1- 1.6000000	2- 1.7920000	1.8325814	1.5325814
5.100	1- 1.5378700	2- 1.6555309	1.8721867	1.5721867
5.200	1- 1.4792899	2- 1.5318090	1.9110228	1.6110228
5.300	1- 1.4239943	2- 1.4194318	1.9491192	1.6491192
5.400	1- 1.3717421	2- 1.3171734	1.9865035	1.6865035
5.500	1- 1.3223140	2- 1.2239600	2.0232018	1.7232018
5.600	1- 1.2755102	2- 1.1388483	2.0592388	1.7592388
5.700	1- 1.2311480	2- 1.0610077	2.0946379	1.7946379
5.800	1- 1.1890606	3- 9.8970557	2.1294214	1.8294214
5.900	1- 1.1490951	3- 9.2429365	2.1636103	1.8636103
6.000	1- 1.1111111	3- 8.6419746	2.1972245	1.8972245
6.100	1- 1.0749798	3- 8.0890705	2.2302831	1.9302831
6.200	1- 1.0405827	3- 7.5796861	2.2628042	1.9628042
6.300	1- 1.0078105	3- 7.1097740	2.2948049	1.9948049
6.400	2- 9.7656250	3- 6.6757202	2.3263016	2.0263016
6.500	2- 9.4674556	3- 6.2742901	2.3573099	2.0573099
6.600	2- 9.1827365	3- 5.9025855	2.3878449	2.0878449
6.700	2- 8.9106705	3- 5.5580034	2.4179206	2.1179206
6.800	2- 8.6505190	3- 5.2382035	2.4475508	2.1475508
6.900	2- 8.4015963	3- 4.9410774	2.4767484	2.1767484
7.000	2- 8.1632653	3- 4.6647230	2.5055259	2.2055259
7.100	2- 7.9349335	3- 4.4074219	2.5338952	2.2338952
7.200	2- 7.7160494	3- 4.1676193	2.5618676	2.2618676
7.300	2- 7.5060987	3- 3.9439063	2.5894543	2.2894543
7.400	2- 7.3046019	3- 3.7350046	2.6166656	2.3166656
7.500	2- 7.1111111	3- 3.5397531	2.6435116	2.3435116
7.600	2- 6.9252078	3- 3.3570952	2.6700021	2.3700021
7.700	2- 6.7465003	3- 3.1860686	2.6961463	2.3961463
7.800	2- 6.5746220	3- 3.0257958	2.7219531	2.4219531
7.900	2- 6.4092293	3- 2.8754754	2.7474311	2.4474311
8.000	2- 6.2500000	3- 2.7343750	2.7725887	2.4725887
8.100	2- 6.0966316	3- 2.6018242	2.7974337	2.4974337
8.200	2- 5.9488400	3- 2.4772088	2.8219739	2.5219739
8.300	2- 5.8063580	3- 2.3599655	2.8462166	2.5462166
8.400	2- 5.6689342	3- 2.2495771	2.8701690	2.5701690
8.500	2- 5.5363322	3- 2.1455682	2.8938379	2.5938379

x	K ₁	K ₂	K ₃	K ₄
8.600	2- 5.4083288	3- 2.0475014	2.9172300	2.6172300
8.700	2- 5.2847140	3- 1.9549741	2.9403516	2.6403516
8.800	2- 5.1652893	3- 1.8676150	2.9632090	2.6632090
8.900	2- 5.0498674	3- 1.7850813	2.9858081	2.6858081
9.000	2- 4.9382716	3- 1.7070568	3.0081547	2.7081547
9.100	2- 4.8303345	3- 1.6332492	3.0302544	2.7302544
9.200	2- 4.7258979	3- 1.5633878	3.0521126	2.7521126
9.300	2- 4.6248121	3- 1.4972221	3.0737344	2.7737344
9.400	2- 4.5269353	3- 1.4345200	3.0951250	2.7951250
9.500	2- 4.4321330	3- 1.3750662	3.1162892	2.8162892
9.600	2- 4.3402778	3- 1.3186608	3.1372318	2.8372318
9.700	2- 4.2512488	3- 1.2651181	3.1579574	2.8579574
9.800	2- 4.1649313	3- 1.2142657	3.1784704	2.8784704
9.900	2- 4.0812162	3- 1.1659428	3.1987751	2.8987751
10.000	2- 4.0000000	3- 1.1200000	3.2188758	2.9188758
10.250	2- 3.8072576	3- 1.0146647	3.2682610	2.9682610
10.500	2- 3.6281179	4- 9.2142673	3.3164561	3.0164561
10.750	2- 3.4613304	4- 8.3865656	3.3635171	3.0635171
11.000	2- 3.3057851	4- 7.6497505	3.4094961	3.1094961
11.250	2- 3.1604938	4- 6.9921047	3.4544418	3.1544418
11.500	2- 3.0245747	4- 6.4036365	3.4983997	3.1983997
11.750	2- 2.8972386	4- 5.8757941	3.5414121	3.2414121
12.000	2- 2.7777778	4- 5.4012347	3.5835189	3.2835189
12.250	2- 2.6655560	4- 4.9736321	3.6247575	3.3247575
12.500	2- 2.5600000	4- 4.5875200	3.6651629	3.3651629
12.750	2- 2.4605921	4- 4.2381594	3.7047681	3.4047681
13.000	2- 2.3668639	4- 3.9214313	3.7436043	3.4436043
13.250	2- 2.2783909	4- 3.6337455	3.7817007	3.4817007
13.500	2- 2.1947874	4- 3.3719642	3.8190850	3.5190850
13.750	2- 2.1157025	4- 3.1333379	3.8557832	3.5557832
14.000	2- 2.0408163	4- 2.9154518	3.8918203	3.5918203
14.250	2- 1.9698369	4- 2.7161802	3.9272194	3.6272194
14.500	2- 1.9024970	4- 2.5336464	3.9620029	3.6620029
14.750	2- 1.8385521	4- 2.3661917	3.9961918	3.6961918
15.000	2- 1.7777778	4- 2.2123457	4.0298060	3.7298060
15.250	2- 1.7199678	4- 2.0708024	4.0628646	3.7628646
15.500	2- 1.6649324	4- 1.9403999	4.0953856	3.7953856
15.750	2- 1.6124969	4- 1.8201023	4.1273863	3.8273863
16.000	2- 1.5625000	4- 1.7089843	4.1588830	3.8588830

Table 8A (continued)

Table 9A
Values of the Four Auxiliary P-Functions

x	$P_1 = x^2/4$	P_2	P_3	P_4
0.050	4- 6.2500000	3- 1.2500000	7- 5.8593750	8- 7.8125000
0.100	3- 2.5000000	3- 5.0000000	6- 9.1375000	6- 1.2500000
0.150	3- 5.6250000	2- 1.1250000	5- 4.17460937	6- 6.3281250
0.200	2- 1.0000000	2- 2.0000000	4- 1.5000000	5- 2.0000000
0.250	2- 1.5625000	2- 3.1250000	4- 3.6621093	5- 4.8828124
0.300	2- 2.2500000	2- 4.5000000	4- 7.5937500	4- 1.0125000
0.350	2- 3.0625000	2- 6.1250000	3- 1.4068359	4- 1.8757812
0.400	2- 4.0000000	2- 8.0000000	3- 2.4000000	4- 3.2000000
0.450	2- 5.0625000	1- 1.0125000	3- 3.8443359	4- 5.1257812
0.500	2- 6.2500000	1- 1.2500000	3- 5.8593750	4- 7.8125000
0.550	2- 7.5625000	1- 1.5125000	3- 8.5787109	3- 1.1438281
0.600	2- 9.0000000	1- 1.8000000	2- 1.2150000	3- 1.6200000
0.650	1- 1.0562500	1- 2.1125000	2- 1.6734960	3- 2.2313280
0.700	1- 1.2250000	1- 2.4500000	2- 2.2509375	3- 3.0012500
0.750	1- 1.4062500	1- 2.8125000	2- 2.9663085	3- 3.9550750
0.800	1- 1.6000000	1- 3.2000000	2- 3.8400000	3- 5.1200000
0.850	1- 1.8062500	1- 3.6125000	2- 4.8938085	3- 6.5250780
0.900	1- 2.0250000	1- 4.0500000	2- 6.1509375	3- 8.2012500
0.950	1- 2.2562500	1- 4.5125000	2- 7.6359960	2- 1.0181328
1.000	1- 2.5000000	1- 5.0000000	2- 9.3750000	2- 1.2500000
1.050	1- 2.7562500	1- 5.5125000	1- 1.1395371	2- 1.5193828
1.100	1- 3.0250000	1- 6.0500000	1- 1.3725938	2- 1.8301250
1.150	1- 3.3062500	1- 6.6125000	1- 1.6396933	2- 2.1862578
1.200	1- 3.6000000	1- 7.2000000	1- 1.9440000	2- 2.5920000
1.250	1- 3.9062500	1- 7.8125000	1- 2.2888183	2- 3.0517578
1.300	1- 4.2250000	1- 8.4500000	1- 2.6775937	2- 3.5701250
1.350	1- 4.5562500	1- 9.1125000	1- 3.1139121	2- 4.1518828
1.400	1- 4.9000000	1- 9.8000000	1- 3.6015000	2- 4.8020000
1.450	1- 5.2562500	1- 10.5125000	1- 4.1442246	2- 5.5256328
1.500	1- 5.6250000	1- 1.1250000	1- 4.7460937	2- 6.3281250
1.550	1- 6.0062500	1- 1.2012500	1- 5.4112558	2- 7.2150078
1.600	1- 6.4000000	1- 1.2800000	1- 6.1440000	2- 8.1920000
1.650	1- 6.8062500	1- 1.3612500	1- 6.9487558	2- 9.12650078
1.700	1- 7.2250000	1- 1.4450000	1- 7.8300937	1- 1.0440125
1.750	1- 7.6562500	1- 1.5312500	1- 8.7927246	1- 1.1723633
1.800	1- 8.1000000	1- 1.6200000	1- 9.8415000	1- 1.3122000
1.850	1- 8.5562500	1- 1.7112500	1- 1.0981412	1- 1.4641883
1.900	1- 9.0250000	1- 1.8050000	1- 1.2217594	1- 1.6290125
1.950	1- 9.5062500	1- 1.9012500	1- 1.3555318	1- 1.8073758
2.000	1- 10.0000000	2- 2.0000000	1- 1.5000000	1- 2.0000000
2.050	1- 10.5062500	2- 2.1012500	1- 1.6557192	1- 2.2076256
2.100	1- 11.0250000	2- 2.2050000	1- 1.8232593	1- 2.4310124
2.150	1- 11.5562500	2- 2.3112500	2- 2.0032036	1- 2.6709382
2.200	1- 12.1000000	2- 2.4200000	2- 2.1961500	1- 2.9282000
2.250	1- 12.6562500	2- 2.5312500	2- 2.4027099	1- 3.2036132

Table 9A (continued)

x	$P_1 = x^2/4$	P_2	P_3	P_4
2.300	1.3225000	2.6450000	2.6235093	1.344980124
2.350	1.3806250	2.7612500	2.8591879	1.38122506
2.400	1.4400000	2.8800000	3.1104000	1.41472000
2.450	1.5006250	3.0012500	3.3778129	1.45037506
2.500	1.5625000	3.1250000	3.6621093	1.48828124
2.550	1.6256250	3.2512500	3.9639849	1.52853132
2.600	1.6900000	3.3800000	4.2841500	1.57122000
2.650	1.7556250	3.5112500	4.6233286	1.61644382
2.700	1.8225000	3.6450000	4.9822593	1.66430124
2.750	1.8906250	3.7812500	5.3616942	1.71489256
2.800	1.9600000	3.9200000	5.7624000	1.76832000
2.850	2.0306250	4.0612500	6.1851567	1.82468756
2.900	2.1025000	4.2050000	6.6307593	1.88410124
2.950	2.1756250	4.3512500	7.1000161	1.94666822
3.000	2.2500000	4.5000000	7.5937500	1.0125000
3.050	2.3256250	4.6512500	8.1127974	1.0817063
3.100	2.4025000	4.8050000	8.6580093	1.1544012
3.150	2.4806250	4.9612500	9.2302504	1.2307001
3.200	2.5600000	5.1200000	9.8304000	1.3107200
3.250	2.6406250	5.2812500	1.0459350	1.3945801
3.300	2.7225000	5.4450000	1.1118009	1.4824012
3.350	2.8056250	5.6112500	1.1807297	1.5743063
3.400	2.8900000	5.7800000	1.2528150	1.6704200
3.450	2.9756250	5.9512500	1.3281516	1.7708688
3.500	3.0625000	6.1250000	1.4068359	1.8757812
3.550	3.1506250	6.3012500	1.4889657	1.9853076
3.600	3.2400000	6.4800000	1.5746400	2.0995200
3.650	3.3306250	6.6612500	1.6639594	2.2186126
3.700	3.4225000	6.8450000	1.7570259	2.3427012
3.750	3.5156250	7.0312500	1.8539428	2.4719238
3.800	3.6100000	7.2200000	1.9548150	2.6064200
3.850	3.7056250	7.4112500	2.0597485	2.7463314
3.900	3.8025000	7.6050000	2.1688509	2.8918012
3.950	3.9006250	7.8012500	2.2822312	3.0429750
4.000	4.0000000	8.0000000	2.4000000	3.2000000
4.050	4.1006250	8.2012500	2.5222687	3.3630250
4.100	4.2025000	8.4050000	2.6491509	3.5322012
4.150	4.3056250	8.6112500	2.7807610	3.7076814
4.200	4.4100000	8.8200000	2.9172150	3.8896200
4.250	4.5156250	9.0312500	3.0586303	4.0781738
4.300	4.6225000	9.2450000	3.2051259	4.2735012
4.350	4.7306250	9.4612500	3.3568219	4.4757626
4.400	4.8400000	9.6800000	3.5138400	4.6851200
4.450	4.9506250	9.9012500	3.6763032	4.9017376
4.500	5.0625000	1.0125000	3.8443359	5.1257812

Table 9A (continued)

x	$P_1 = x^2/4$	P_2	P_3	P_4
4.550	5.1756250	1 1.0351250	1 4.0130641	5.3574188
4.600	5.2900000	1 1.0580000	1 4.1976150	5.5968200
4.650	5.4056250	1 1.0811250	1 4.3831173	5.8441564
4.700	5.5225000	1 1.1045000	1 4.5747009	6.0996012
4.750	5.6406250	1 1.1281250	1 4.7724975	6.3633300
4.800	5.7600000	1 1.1520000	1 4.9766400	6.6355200
4.850	5.8806250	1 1.1761250	1 5.1872625	6.9163500
4.900	6.0025000	1 1.2005000	1 5.4045009	7.2060012
4.950	6.1256250	1 1.2251250	1 5.6284923	7.5046564
5.000	6.2500000	1 1.2500000	1 5.8593750	7.8125000
5.100	6.5025000	1 1.3005000	1 6.3423759	8.4565012
5.200	6.7600000	1 1.3520000	1 6.8546400	9.1395200
5.300	7.0225000	1 1.4045000	1 7.3973259	9.8631012
5.400	7.2900000	1 1.4580000	1 7.9716150	1 1.0628820
5.500	7.5625000	1 1.5125000	1 8.5787109	1 1.1438281
5.600	7.8400000	1 1.5680000	1 9.2198400	1 1.2293120
5.700	8.1225000	1 1.6245000	1 9.8962509	1 1.3195001
5.800	8.4100000	1 1.6820000	2 1.0609215	1 1.4145620
5.900	8.7025000	1 1.7405000	2 1.1360026	1 1.5146701
6.000	9.0000000	1 1.8000000	2 1.2150000	1 1.6200000
6.100	9.3025000	1 1.8605000	2 1.2980476	1 1.7307301
6.200	9.6100000	1 1.9220000	2 1.3852815	1 1.8470420
6.300	9.9225000	1 1.9845000	2 1.4768401	1 1.9691201
6.400	1 1.0240000	1 2.0480000	2 1.5728640	1 2.0971520
6.500	1 1.0562500	1 2.1125000	2 1.6734960	1 2.2313280
6.600	1 1.0890000	1 2.1780000	2 1.7788815	1 2.3718420
6.700	1 1.1222500	1 2.2445000	2 1.8891675	1 2.5188900
6.800	1 1.1560000	1 2.3120000	2 2.0045040	1 2.6726720
6.900	1 1.1902500	1 2.3805000	2 2.1250425	1 2.8333900
7.000	1 1.2250000	1 2.4500000	2 2.2509375	1 3.0012500
7.100	1 1.2602500	1 2.5205000	2 2.3823450	1 3.1764600
7.200	1 1.2960000	1 2.5920000	2 2.5194240	1 3.3592320
7.300	1 1.3322500	1 2.6645000	2 2.6623350	1 3.5497800
7.400	1 1.3690000	1 2.7380000	2 2.8112415	1 3.7483220
7.500	1 1.4062500	1 2.8125000	2 2.9663085	1 3.9550780
7.600	1 1.4440000	1 2.8880000	2 3.1277040	1 4.1702720
7.700	1 1.4822500	1 2.9645000	2 3.2955975	1 4.3941300
7.800	1 1.5210000	1 3.0420000	2 3.4701615	1 4.6268820
7.900	1 1.5602500	1 3.1205000	2 3.6515700	1 4.8687600
8.000	1 1.6000000	1 3.2000000	2 3.8400000	1 5.1200000
8.100	1 1.6402500	1 3.2805000	2 4.0356300	1 5.3808400
8.200	1 1.6810000	1 3.3620000	2 4.2386415	1 5.6515220
8.300	1 1.7222500	1 3.4445000	2 4.4492175	1 5.9322900
8.400	1 1.7640000	1 3.5280000	2 4.6675440	1 6.2233920
8.500	1 1.8062500	1 3.6125000	2 4.8938085	1 6.5250780

Table 9A (continued)

x	$P_1 = x^2/4$	P_2	P_3	P_4
8.600	1 1.8490000	1 3.6980000	2 5.1282015	1 6.8376020
8.700	1 1.8922500	1 3.7845000	2 5.3709150	1 7.1612200
8.800	1 1.9360000	1 3.8720000	2 5.6221440	1 7.4961920
8.900	1 1.9802500	1 3.9605000	2 5.8820850	1 7.8427800
9.000	1 2.0250000	1 4.0500000	2 6.1509375	1 8.2012500
9.100	1 2.0702500	1 4.1405000	2 6.4289025	1 8.5718700
9.200	1 2.1160000	1 4.2320000	2 6.7161840	1 8.9549120
9.300	1 2.1622500	1 4.3245000	2 7.0129875	1 9.3506500
9.400	1 2.2090000	1 4.4180000	2 7.3195215	1 9.7593620
9.500	1 2.2562500	1 4.5125000	2 7.6359960	2 1.0181328
9.600	1 2.3040000	1 4.6080000	2 7.9626240	2 1.0616832
9.700	1 2.3522500	1 4.7045000	2 8.2996200	2 1.1066160
9.800	1 2.4010000	1 4.8020000	2 8.6472015	2 1.1529602
9.900	1 2.4502500	1 4.9005000	2 9.0055875	2 1.2007450
10.000	1 2.5000000	1 5.0000000	2 9.3750000	2 1.2500000
10.250	1 2.6265625	1 5.2531250	3 1.0348246	2 1.3797661
10.500	1 2.7562500	1 5.5125000	3 1.1395371	2 1.5193828
10.750	1 2.8890625	1 5.7781250	3 1.2520023	2 1.6693364
11.000	1 3.0250000	1 6.0500000	3 1.3725938	2 1.8301250
11.250	1 3.1640625	1 6.3281250	3 1.5016938	2 2.0022584
11.500	1 3.3062500	1 6.6125000	3 1.6396933	2 2.1862578
11.750	1 3.4515625	1 6.9031250	3 1.7869926	2 2.3826568
12.000	1 3.6000000	1 7.2000000	3 1.9440000	2 2.5920000
12.250	1 3.7515625	1 7.5031250	3 2.1111331	2 2.8148442
12.500	1 3.9062500	1 7.8125000	3 2.2888183	2 3.0517578
12.750	1 4.0640625	1 8.1281250	3 2.4774906	2 3.3033208
13.000	1 4.2250000	1 8.4500000	3 2.6775937	2 3.5701250
13.250	1 4.3890625	1 8.7781250	3 2.8895805	2 3.8527740
13.500	1 4.5562500	1 9.1125000	3 3.1139121	2 4.1518828
13.750	1 4.7265625	1 9.4531250	3 3.3510589	2 4.4680786
14.000	1 4.9000000	1 9.8000000	3 3.6015000	2 4.8020000
14.250	1 5.0765625	2 1.0153125	3 3.8657230	2 5.1542974
14.500	1 5.2562500	2 1.0512500	3 4.1442246	2 5.5256328
14.750	1 5.4390625	2 1.0878125	3 4.4375101	2 5.9166802
15.000	1 5.6250000	2 1.1250000	3 4.7460937	2 6.3281250
15.250	1 5.8140625	2 1.1628125	3 5.0704984	2 6.7606546
15.500	1 6.0062500	2 1.2012500	3 5.4112558	2 7.2150078
15.750	1 6.2015625	2 1.2403125	3 5.7689065	2 7.6918754
16.000	1 6.4000000	2 1.2800000	3 6.1440000	2 8.1920000

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Tables in Set B

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The values of the functions in the first seven tables of set B are based on the evaluation of the simplified form of the x^{-n} (asymptotic expansion) series. All tables in set B include the range of x values from 10.00 to 40.00, inclusive, in increments of 0.250.

Table 1B

Values of the Four Q_c Functions Appearing in the Formulas for Q and N_c

x	Q_1	Q_2	Q_3	Q_4
10.000	4.3845884	2.7393554-	6- 9.5097144	6- 2.6006254-
10.250	4.3338210	3.8836383-	6- 7.17076134	7- 7.1719574-
10.500	4.0609642	5.1506846-	6- 6.0677208	7- 4.9552890
10.750	3.5159241	6.5139391-	6- 4.6392947	6- 1.2135888
11.000	2.6471695	7.9341071-	6- 3.4380316	6- 1.5780935
11.250	1.4039224	9.3572050-	6- 2.4582034	6- 1.6994103
11.500	2.6098736-	1.0712751-	6- 1.6814070	6- 1.6617522
11.750	2.3875429-	1.1912259-	6- 1.0827200	6- 1.5277067
12.000	5.004842-	1.12848178-	7- 6.3487344	6- 1.3424225
12.250	8.1226640-	1.3393537-	7- 3.1095876	6- 1.1373219
12.500	1.1732119-	1.3402491-	8- 8.6060933	7- 9.3327482
12.750	1.5792444-	1.2712084-	8- 6.1866399-	7- 7.4324374
13.000	2.0227069-	1.1145499-	7- 1.5164772-	7- 5.7442880
13.250	2.4915390-	8.5171557-	7- 1.9887615-	7- 4.2997059
13.500	2.9685074-	4.6399304-	7- 2.1611579-	7- 3.1026838
13.750	3.4304733-	6.6511659	7- 2.1322300-	7- 2.1397820
14.000	3.8477405-	7.5562762	7- 1.9771988-	7- 1.3874683
14.250	4.1835514-	1.6155716	7- 1.7517786-	8- 8.1736317
14.500	4.3938219-	2.6530918	7- 1.4958125-	8- 3.9983272
14.750	4.4271726-	3.86722899	7- 1.2365825-	8- 1.0633744
15.000	4.2254065-	5.2471493	8- 9.9167632-	9- 8.9164865-
15.250	3.7245410-	6.7688259	8- 7.7141239-	8- 2.0948508-
15.500	2.8564709-	8.3927091	8- 5.8083883-	8- 2.7394224-
15.750	1.5514779-	1.0060428	8- 4.2132457-	8- 2.9841744-
16.000	2.5833290	1.1691946	8- 2.9180206-	8- 2.9560121-
16.250	2.6345568	1.3182821	8- 1.8971387-	8- 2.7535224-
16.500	5.6268169	1.4402030	8- 1.1170576-	8- 2.4510054-
16.750	9.2658943	1.5190615	9- 5.4119931-	8- 2.1025494-
17.000	1.355547	1.5361336	9- 1.3330840-	8- 1.7459152-
17.250	1.8463140	1.4700036	9- 1.4042899	8- 1.4060125-
17.500	2.3909241	1.2968990	9- 3.1016708	8- 1.0979252-
17.750	2.9756228	9.9127102	9- 4.0184333	9- 8.2947423-
18.000	3.5796522	5.2669190	9- 4.3707728	9- 6.0329909-
18.250	4.1740843	1.2289040-	9- 4.3337048	9- 4.1852587-
18.500	4.7207365	9.8148459-	9- 4.0448390	9- 2.7205415-
18.750	5.1712243	2.0689308-	9- 3.6091415	9- 1.5953021-
19.000	5.4663299	3.3982786-	9- 3.1039698	10- 7.6049332-
19.250	5.5358036	4.9726726-	9- 2.5840145	10- 1.6646201-
19.500	5.2987037	6.7817141-	9- 2.0859042	10- 2.3382434
19.750	4.6645524	8.7973788-	9- 1.6322657	10- 4.8284861
20.000	3.5354735	1.0969598-	9- 1.2352179	10- 6.1755537
20.250	1.8094731	1.3221531-	10- 8.9929020	10- 6.6904500
20.500	6.1480785-	1.5444879-	10- 6.2377205	10- 6.6272323
20.750	3.8317327-	1.7495398-	10- 4.0456559	10- 6.1874143
21.000	7.9204910-	1.9189114-	10- 2.3559772	10- 5.5259653

Table 1B (continued)

x	Q ₁	Q ₂	Q ₃	Q ₄
21.250	3	3	10-	10-
21.500	3	3	11-	10-
21.750	3	3	10-	10-
22.000	3	3	10-	10-
22.250	3	3	10-	10-
22.500	3	3	10-	10-
22.750	3	3	10-	10-
23.000	3	3	11-	11-
23.250	3	3	11-	11-
23.500	3	3	11-	11-
23.750	3	3	11-	11-
24.000	3	3	11-	11-
24.250	3	3	11-	11-
24.500	3	3	11-	11-
24.750	3	3	11-	11-
25.000	3	3	11-	11-
25.250	3	3	11-	11-
25.500	4	4	11-	11-
25.750	4	4	11-	11-
26.000	4	4	11-	11-
26.250	4	4	11-	11-
26.500	4	4	11-	11-
26.750	4	4	11-	11-
27.000	4	4	11-	11-
27.250	4	4	11-	11-
27.500	4	4	11-	11-
27.750	4	4	11-	11-
28.000	5	5	12-	12-
28.250	5	5	12-	12-
28.500	5	5	12-	12-
28.750	4	5	12-	12-
29.000	4	5	12-	12-
29.250	4	5	12-	12-
29.500	4	5	12-	12-
29.750	4	5	12-	12-
30.000	5	5	13-	13-
30.250	5	5	13-	13-
30.500	5	5	13-	13-
30.750	5	5	13-	13-
31.000	5	5	13-	13-
31.250	6	5	13-	13-
31.500	6	4	14-	14-
31.750	6	5	14-	14-
32.000	6	5	14-	14-
32.250	6	5	14-	14-

Table 1B (continued)

x	Q_1	Q_2	Q_3	Q_4
32.500	6 1.9421626-	6 1.4538447	14- 5.7276338-	15- 8.4573751
32.750	6 1.9403717-	6 2.0753575	14- 4.7558500-	15- 1.4211023-
33.000	6 1.8108041-	6 2.7919519	14- 3.8277054-	15- 8.0124694-
33.250	6 1.5142849-	6 3.5921262	14- 2.9820160-	14- 1.2008501-
33.500	6 1.0079203-	6 4.4545779	14- 2.2402735-	14- 1.4024004-
33.750	5 2.4652923-	6 5.3459250	14- 1.6110489-	14- 1.4586826-
34.000	5 8.1524560	6 6.2183809	14- 1.0937105-	14- 1.4136051-
34.250	6 2.2200223	6 7.0074401	15- 6.8146217-	14- 1.3025930-
34.500	6 4.0038304	6 7.6298504	15- 3.6372956-	14- 1.1533279-
34.750	6 6.1912665	6 7.9820608	15- 1.2798934-	15- 9.8668623-
35.000	6 8.7895339	6 7.9393462	16- 3.8883487	15- 8.1776747-
35.250	7 1.1781412	6 7.3560920	15- 1.4967614	15- 6.5690835-
35.500	7 1.5117146	6 6.0675103	15- 2.1622119	15- 5.1064128-
35.750	7 1.8705493	6 3.8933282	15- 2.4903374	15- 3.8255525-
36.000	7 2.2403973	5 6.4381902	15- 2.5714253	15- 2.7404824-
36.250	7 2.6008940	6 3.8711581-	15- 2.4805916	15- 1.8495606-
36.500	7 2.9245998	6 9.8297170-	15- 2.2784235	15- 1.1406653-
36.750	7 3.1761216	7 1.7381544-	15- 2.0122603	16- 5.9528357-
37.000	7 3.3114554	7 2.6627127-	15- 1.7177896	16- 1.9161697-
37.250	7 3.2776503	7 3.7592485-	15- 1.4207859	17- 9.3122948
37.500	7 3.0129114	7 5.0198968-	15- 1.1388641	16- 2.8110433
37.750	7 2.4473645	7 6.4228716-	16- 8.8311078	16- 3.9282408
38.000	7 1.5046468	7 7.9286409-	16- 6.5956193	16- 4.4648714
38.250	6 1.0450960	7 9.4757616-	16- 4.7049448	16- 4.5771898
38.500	7 1.8332894-	8 1.0976661-	16- 3.1550594	16- 4.3951371
38.750	7 4.3836217-	8 1.2313495-	16- 1.9240078	16- 4.0234915
39.000	7 7.6089462-	8 1.3334523-	17- 9.7890222	16- 3.5440392
39.250	8 1.1550367-	8 1.3851241-	17- 2.8130815	16- 3.0183855
39.500	8 1.6216715-	8 1.3636983-	17- 2.0881771-	16- 2.4909603
39.750	8 2.1571673-	8 1.2427566-	17- 5.3035281-	16- 1.9920290
40.000	8 2.7518832-	7 9.9245440-	17- 7.1919485-	16- 1.5405527

Table 2B
Values of the Four N_{θ} Functions Appearing in the Formula for N_{θ}

x	N_{θ_1}	N_{θ_2}	N_{θ_3}	N_{θ_4}
10.000	6.9157495	1 2.4734932-	5- 2.6009553-	5- 4.2156523
10.250	2.9025764	1 2.9503926-	5- 2.6440660-	5- 2.9817638
10.500	2.6197154-	1 3.4144213-	5- 2.5108240-	5- 1.9994896
10.750	9.8420270-	1 3.8339459-	5- 2.2716066-	5- 1.2394380
11.000	1 1.8920913-	1 4.1689485-	5- 1.9781580-	6- 6.6931794
11.250	1 2.9956974-	1 4.3704539-	5- 1.6671706-	6- 2.5688642
11.500	1 4.2968859-	1 4.3802969-	5- 1.3634574-	7- 2.8161884-
11.750	1 5.7862902-	1 4.1313672-	5- 1.0826895-	6- 2.1308991-
12.000	1 7.4398575-	1 3.5484876-	6- 8.3369175-	6- 3.2158221-
12.250	1 9.2150531-	1 2.5501138-	6- 6.2032744-	6- 3.7360654-
12.500	2 1.1046816-	1 1.0510397-	6- 4.4300637-	6- 3.8553984-
12.750	2 1.2843443-	1 1.0336829	6- 2.9986500-	6- 3.7045868-
13.000	2 1.4482611-	1 3.7834072	6- 1.8766570-	6- 3.3851959-
13.250	2 1.5807871-	1 7.2649559	6- 1.0246233-	6- 2.9737603-
13.500	2 1.6625967-	2 1.1523917	7- 4.0075786-	6- 2.5259553-
13.750	2 1.6705491-	2 1.6574083	8- 3.5819359	6- 2.0805317-
14.000	2 1.5777436-	2 2.2384995	7- 3.2300621	6- 1.6628684-
14.250	2 1.3538300-	2 2.8867677	7- 4.9453413	6- 1.2880777-
14.500	1 9.6565828-	2 3.5858865	7- 5.7942902	7- 9.6362929-
14.750	1 3.7833293-	2 4.3103943	7- 6.0193152	7- 6.9152774-
15.000	1 4.4321799	2 5.0239493	7- 5.8171760	7- 4.7005035-
15.250	2 1.5320880	2 5.6776427	7- 5.3430555	7- 2.9511066-
15.500	2 2.9165618	2 6.2084409	7- 4.7156824	7- 1.6129747-
15.750	2 4.6165322	2 6.5379898	7- 4.0227704	8- 6.2633095-
16.000	2 6.6391428	2 6.5719685	7- 3.3263969	9- 6.8906814
16.250	2 8.9735788	2 6.2001557	7- 2.6680673	8- 5.2955516
16.500	3 1.1585096	2 5.2976154	7- 2.0732207	8- 8.0699521
16.750	3 1.4408395	2 3.7272630	7- 1.5551428	8- 9.4603466
17.000	3 1.7340361	2 1.3441209	7- 1.1182797	8- 9.8453585
17.250	3 2.0232646	2 1.9982433-	8- 7.6092533	8- 9.5356068
17.500	3 2.2884404	2 6.4388088-	8- 4.7736868	8- 8.7785285
17.750	3 2.5035532	3 1.2097316-	8- 2.5955726	8- 7.7652780
18.000	3 2.6361413	3 1.9059279-	9- 9.8332120	8- 6.6384510
18.250	3 2.6469754	3 2.7357560-	9- 1.5681050-	8- 5.5000547
18.500	3 2.4900792	3 3.6950536-	9- 9.1465625-	8- 4.4190954
18.750	3 2.1131714	3 4.7696633-	8- 1.3723077-	8- 3.4385839
19.000	3 1.4587170	3 5.9325941-	8- 1.6019967-	8- 2.5816474
19.250	2 4.6571162	3 7.1409649-	8- 1.6652257-	8- 1.8567618
19.500	2 9.2764090-	3 8.3327768-	8- 1.6128110-	8- 1.2621062
19.750	3 2.7801601-	3 9.4237625-	8- 1.4855033-	9- 7.8904160
20.000	3 5.1427051-	4 1.0304527-	8- 1.3149745-	9- 4.2483884
20.250	3 8.0517939-	4 1.0838159-	8- 1.1250049-	9- 1.5474627
20.500	4 1.1521753-	4 1.0858855-	9- 9.3271501-	10- 3.6515210-
20.750	4 1.5535328-	4 1.0171869-	9- 7.4977573-	9- 1.6371408-
21.000	4 2.0032850-	3 8.5554140-	9- 5.8352475-	9- 2.4043866-

Table 2B (continued)

x	N_{θ_1}	N_{θ_2}	N_{θ_3}	N_{θ_4}
21.250	4 2.4899949-	3 5.7649845-	9- 4.3797009-	9- 2.7871460-
21.500	4 2.9954301-	3 1.5409580-	9- 3.1464609-	9- 2.8883484-
21.750	4 3.4931896-	3 4.3799411	9- 2.1333151-	9- 2.7934150-
22.000	4 3.9473185-	4 1.2248557	9- 1.3263483-	9- 2.5711500-
22.250	4 4.3110539-	4 2.2281794	10- 7.0451467-	9- 2.2752523-
22.500	4 4.5258185-	4 3.4635250	10- 2.4313872-	9- 1.9461864-
22.750	4 4.5205723-	4 4.9369207	11- 8.3515336	9- 1.6132076-
23.000	4 4.2117912-	4 6.6408035	10- 3.0045632	9- 1.2963404-
23.250	4 3.5042758-	4 8.5493295	10- 4.3079372	9- 1.0082355-
23.500	4 2.2930029-	5 1.0613031	10- 4.9505483	10- 7.5585073-
23.750	3 4.6641620-	5 1.2753080	10- 5.1086589	10- 5.4189433-
24.000	4 2.0886117	5 1.4855234	10- 4.9289999	10- 3.6604521-
24.250	4 5.4797856	5 1.6763931	10- 4.5300467	10- 2.2594621-
24.500	4 9.8000459	5 1.8276711	10- 4.0045079	10- 1.1799416-
24.750	5 1.5115594	5 1.9139785	10- 3.4224152	11- 3.7941201-
25.000	5 2.1451152	5 1.9045365	10- 2.8344871	11- 1.8660147
25.250	5 2.8772159	5 1.7631410	10- 2.2755158	11- 5.6143726
25.500	5 3.6964183	5 1.4485156	10- 1.7675263	11- 7.8524393
25.750	5 4.5809834	4 9.1514095	10- 1.3226375	11- 8.9375736
26.000	5 5.4963322	4 1.1467712	11- 9.4557080	11- 9.1772365
26.250	5 6.3924202	5 1.0018466-	11- 6.3574995	11- 8.8278044
26.500	5 7.2011145	5 2.4809588-	11- 3.8903045	11- 8.0966285
26.750	5 7.8338120	5 4.3626465-	11- 1.9907062	11- 7.1461365
27.000	5 8.1794518	5 6.6750855-	12- 5.8389166	11- 6.0991786
27.250	5 8.1033440	5 9.4281228-	12- 4.0855749-	11- 5.0448128
27.500	5 7.4471590	6 1.2605510-	11- 1.0631470-	11- 4.0441192
27.750	5 6.0304301	6 1.6155767-	11- 1.4508243-	11- 3.1357556
28.000	5 3.6542566	6 1.9981987-	11- 1.6348093-	11- 2.3409409
28.250	4 1.0767874	6 2.3930766-	11- 1.6695363-	11- 1.6678253
28.500	5 4.8226707-	6 2.7780492-	11- 1.6004366-	11- 1.1152134
28.750	6 1.1338895-	6 3.1229871-	11- 1.4642775-	12- 6.7559441
29.000	6 1.9613664-	6 3.3887470-	11- 1.2898729-	12- 3.3756745
29.250	6 2.9766835-	6 3.5263011-	11- 1.0990200-	13- 8.7713690
29.500	6 4.1836588-	6 3.4762362-	12- 9.0751571-	13- 8.8021527-
29.750	6 5.5744762-	6 3.1687480-	12- 7.2618680-	12- 2.0334770-
30.000	6 7.1256818-	6 2.5243665-	12- 5.6186464-	12- 2.7097856-
30.250	6 8.7936214-	6 1.4555904-	12- 4.1827789-	12- 3.0224483-
30.500	7 1.0509527-	5 1.3024001	12- 2.9682706-	12- 3.0690543-
30.750	7 1.2174408-	6 2.3266087	12- 1.9724376-	12- 2.9310432-
31.000	7 1.3653913-	6 5.2217272	12- 1.1813571-	12- 2.6743304-
31.250	7 1.4773698-	6 8.8903800	13- 5.7418119-	12- 2.3505690-
31.500	7 1.5315744-	7 1.3383529	13- 1.2647957-	12- 1.9987995-
31.750	7 1.5016076-	7 1.8715384	13- 1.8727555	12- 1.6472921-
32.000	7 1.3564930-	7 2.4847974	13- 3.9195602	12- 1.3153823-
32.250	7 1.0610026-	7 3.1673165	13- 5.1061220	12- 1.0152264-

Table 2B (continued)

N ₁	N ₂	N ₃	N ₄
32.500	6	5.7641789-	7
32.750	6	1.3818442	7
33.000	7	1.1239674	7
33.250	7	2.4195892	7
33.500	7	4.0575364	7
33.750	7	6.0594309	7
34.000	7	8.4302647	7
34.250	8	1.151433	8
34.500	8	1.4172697	8
34.750	8	1.7403191	8
35.000	8	2.0701546	8
35.250	8	2.3865733	8
35.500	8	2.6623013	8
35.750	8	2.8620934	8
36.000	8	2.9420032	8
36.250	8	2.8489928	8
36.500	8	2.5210223	8
36.750	8	1.8877702	8
37.000	7	8.7225359	7
37.250	7	6.0645606-	7
37.500	8	2.6291717-	8
37.750	8	5.2708938-	8
38.000	8	8.5932862-	8
38.250	9	1.2635029-	9
38.500	9	1.7399979-	9
38.750	9	2.2842987-	9
39.000	9	2.8853601-	9
39.250	9	3.5237606-	9
39.500	9	4.1697217-	9
39.750	9	4.7810738-	9
40.000	9	5.3012307-	9
32.500	7	3.8992588	7
32.750	7	4.86495538	7
33.000	7	5.3736193	7
33.250	7	6.0111248	7
33.500	7	6.4839070	7
33.750	7	6.6943473	7
34.000	7	6.5244612	7
34.250	7	5.8359636	7
34.500	7	4.4718461	7
34.750	7	2.2598644	7
35.000	6	9.8158630-	6
35.250	7	5.4345490-	7
35.500	8	1.1269030-	8
35.750	8	1.8626456-	8
36.000	8	2.7598438-	8
36.250	8	3.8200620-	8
36.500	15-	8.2507361-	15-
36.750	14-	1.4811363-	14-
37.000	14-	1.8509339-	14-
37.250	14-	2.0036855-	14-
37.500	14-	1.9988492-	14-
37.750	14-	1.8859304-	14-
38.000	14-	1.7048787-	14-
38.250	14-	1.4868859-	14-
38.500	14-	1.2554251-	14-
38.750	14-	1.0273739-	14-
39.000	15-	8.1415424-	15-
39.250	15-	6.2280830-	15-
39.500	15-	4.5698663-	15-
39.750	15-	3.1780456-	15-
40.000	15-	2.0457195-	15-
32.500	13-	5.6377463	13-
32.750	13-	5.6911900	13-
33.000	13-	5.4139165	13-
33.250	13-	4.9251809	13-
33.500	13-	4.3183818	13-
33.750	13-	3.6640423	13-
34.000	13-	3.0131216	13-
34.250	13-	2.4003851	13-
34.500	13-	1.8475752	13-
34.750	13-	1.3663057	13-
35.000	14-	9.6061513	14-
35.250	14-	6.2911998	14-
35.500	14-	3.6679348	14-
35.750	14-	1.6638433	14-
36.000	15-	1.9514897	15-
36.250	14-	8.2507361-	14-
36.500	14-	5.5479011	14-
36.750	14-	4.4084683	14-
37.000	14-	3.3831185	14-
37.250	14-	2.4924330	14-
37.500	14-	1.7431614	14-
37.750	14-	1.1321990	14-
38.000	15-	6.4983054	15-
38.250	15-	2.8233050	15-
38.500	16-	1.3973180	16-
38.750	15-	1.7148428-	15-
39.000	15-	2.8975092-	15-
39.250	15-	3.5530818-	15-
39.500	15-	3.8100264-	15-
39.750	15-	3.7785380-	15-
40.000	15-	3.5502047-	15-
32.500	15-	3.1988303-	15-

Table 3B

Values of the Four M_{γ} Functions Appearing in the Formula for M_{γ}

x	$M_{\gamma 1}$	$M_{\gamma 2}$	$M_{\gamma 3}$	$M_{\gamma 4}$
10.000	2.5556740-	8.2311260-	4.1376335	2.3156639
10.250	3.0669017-	4.20272226-	2.9602479	2.4128375
10.500	3.5689418-	1.4014262	2.0143554	2.3287924
10.750	4.0293641-	8.7872495	1.2758457	2.1324278
11.000	4.4069717-	1.8126761	7.1666075	1.8750170
11.250	4.6511700-	2.9535797	3.0786873	1.5934244
11.500	4.7016794-	4.3047156	2.1690690	1.3130152
11.750	4.4887349-	5.8579165	1.6725871-	1.0502079
12.000	3.9339330-	7.5899830	2.8130953-	8.1464555
12.250	2.9519200-	9.4587327	3.3948688-	6.1099868
12.500	1.4531145-	1.1398780	3.5754158-	4.4042454
12.750	6.5232030	1.3317217	3.4816137-	3.0172099
13.000	3.4490422	1.5089423	3.2128672-	1.9221513
13.250	7.0094412	1.6555333	2.8447691-	1.0842862
13.500	1.1384719	1.7516519	2.4328747-	4.6559261
13.750	1.6594037	1.7734634	2.0163382-	2.8147550
14.000	2.2611683	1.6931757	1.6212444-	2.6369024
14.250	2.9352349	1.4793366	1.12635568-	4.4198077
14.500	3.6654793	1.0974730	9.5163431-	5.3455465
14.750	4.4264130	5.1114810	6.8833761-	5.6483405
15.000	5.1813637	3.1645580-	4.7272530-	5.5196732
15.250	5.8807075	1.4203518-	3.0139522-	5.1116318
15.500	6.4602222	2.8308677-	1.6951575-	4.5414308
15.750	6.8398027	4.5699879-	7.1585619-	3.8963731
16.000	6.9227268	6.6468928-	1.9773550-	3.2388563
16.250	6.5956403	9.0526155-	4.4694949	2.6111531
16.500	5.7296763	1.1753901-	7.3346505	2.0397090
16.750	4.1829814	1.4686371-	8.8295819	1.5389069
17.000	1.8049610	1.7747027-	9.3215840	1.1142805
17.250	1.5572422-	2.0786540-	9.1138031	7.6513820
17.500	6.0497391-	2.3601681-	8.4491509	4.8667369
17.750	1.1799934-	2.5928219-	7.5164357	2.7161255
18.000	1.8901271-	2.7435309-	6.4574612	1.114443
18.250	2.739426-	2.7721978-	5.3744969	2.6799370
18.500	3.7244982-	2.6317014-	4.3374792	7.9331108
18.750	4.8317313-	2.2683082-	3.3907248	1.2640335
19.000	6.0345423-	1.6227069-	2.5588327	1.5088776
19.250	7.2901450-	6.3178580-	1.8517679	1.5877054
19.500	8.5362282-	7.6867979	1.2691209	1.5502338
19.750	9.6876840-	2.6402236	8.0352705	1.4365353
20.000	1.0633614-	5.0366410	4.4336550	1.2779180
20.250	1.1234805-	7.9975097	1.7481762	1.0980262
20.500	1.1322202-	1.1540197	1.6633513-	9.1400185
20.750	1.0696730-	1.5650280	1.4515183-	7.3763876
21.000	9.1310870-	2.0270464	2.2386075-	5.7645682

Table 3B (continued)

x	M _{y1}	M _{y2}	M _{y3}	M _{y4}
21.250	6.3739673-	2.5287996	2.6444036-	4.3467409
21.500	3.2.1576372-	3.0521038	2.7693705-	3.1404082
21.750	3.7905673	3.5704516	2.6972629-	2.1454249
22.000	4.1.1732039	4.0475771	2.4958419-	1.3497604
22.250	4.2.1895148	4.4361493	2.12182364-	7.3402062
22.500	4.3.447501	4.6767096	1.9046868-	2.7493033
22.750	4.4.9461375	4.6969651	1.5844648-	5.2094958
23.000	4.6.6872381	4.4117136	1.2777695-	2.7114530
23.250	4.8.6431599	3.7236042	9.9752062-	4.0461937-
23.500	5.1.0765094	4.2.5249526	7.5099075-	4.7251306-
23.750	5.1.2974433	7.0101520	5.4121491-	4.9207122-
24.000	5.1.5156544	4.1.8650395-	3.6818761-	4.770737-
24.250	5.1.7154669	4.5.2850896-	2.2984107-	4.4110537-
24.500	5.1.8764134	4.9.6566287-	1.2282721-	3.9144565-
24.750	5.1.9727684	5.1.5050641-	4.3115467-	3.3569475-
25.000	5.1.9732584	5.2.1496643-	1.3562157	2.7892577-
25.250	5.1.8410139	5.2.8964585-	5.1395642	2.2464428-
25.500	5.1.5339022	5.3.7343871-	7.4288075	1.7509422-
25.750	5.1.0053419	5.4.6419792-	8.5729173	1.3153654-
26.000	4.2.0571794	5.5.5847487-	8.87733097	9.4494647-
26.250	4.9.1542606-	5.6.5124999-	8.55822299	6.3960656-
26.500	5.2.4062968-	5.7.3566245-	7.9044131	3.9565928-
26.750	5.4.3087154-	5.8.0276329-	7.0008329	2.0716821-
27.000	5.6.6527881-	5.8.4130716-	5.9937438	6.6998538-
27.250	5.9.4503017-	5.8.3762560-	4.9722160	3.2404436
27.500	6.1.2686834-	5.7.7561682-	3.9977466	9.8460514
27.750	6.1.6312464-	5.6.3688743-	3.1096563	1.3808465
28.000	6.2.0231372-	5.4.0111652-	2.3299524	1.5746349
28.250	6.2.4290535-	4.4.6689940-	1.6676125	1.6194276
28.500	6.2.8267724-	4.4.4833363	1.12222458	1.5599862
28.750	6.3.1859698-	6.1.1048484	6.8708499	1.4326533
29.000	6.3.4671403-	6.1.9408698	3.5138857	1.2660063
29.250	6.3.6206856-	6.2.9691721	1.0230257	1.0817453
29.500	6.3.5863747-	6.4.11943659	7.3758582-	8.9566982
29.750	6.3.2932992-	6.5.6093820	1.9012655-	7.1867515
30.000	6.2.6605644-	7.1.1914031	2.5922025-	5.5770187
30.250	6.1.5988966-	8.8.972180	2.9214815-	4.1660872
30.500	4.1.3501580-	7.1.0658209	2.9850842-	2.9693279
30.750	6.2.1915958	7.1.2375122	2.8633485-	1.9853881
31.000	6.5.1074275	7.1.3912795	2.6214905-	1.2015764
31.250	6.8.8118664	7.1.5095374	2.3107744-	5.9813853
31.500	7.1.3359128	7.1.5702465	1.9700828-	1.5158254
31.750	7.1.8766694	7.1.5466692	1.6276929-	1.6283914-
32.000	7.2.4999671	7.1.4073695	1.3030569-	3.6936930-
32.250	7.3.1952541	7.1.1165263	1.0085152-	4.9056684-

Table 3B (continued)

M ₄	M ₃	M ₂	M ₁	x	
13- 5.4659172-	13- 7.5085696-	6- 3.468278	7 3.9428741	32.500	32.500
13- 5.5485144-	13- 5.3270033-	5 7.9973270-	7 4.7118146	32.750	32.750
13- 5.2990853-	13- 3.5366060-	7 1.0696432-	7 5.4573778	33.000	33.000
13- 4.8357204-	13- 2.1131611-	7 2.3741607-	7 6.1188886	33.250	33.250
13- 4.2511737-	13- 1.0198587-	7 4.0272987-	7 6.6175443	33.500	33.500
13- 3.6157108-	14- 2.1326932-	7 6.0520351-	7 6.8547251	33.750	33.750
13- 2.9803102-	14- 3.5217875	7 8.4547221-	7 6.7110126	34.000	34.000
13- 2.3799412-	14- 7.2101474	8 1.1218033-	7 6.0461869	34.250	34.250
13- 1.8366634-	14- 9.3460680	8 1.4292812-	7 4.7007416	34.500	34.500
13- 1.3624660-	13- 1.0298761	8 1.7588929-	7 2.4993262	34.750	34.750
14- 9.6178163-	13- 1.0386678	8 2.0965232-	6 7.4340591-	35.000	35.000
14- 6.3361027-	14- 9.8759283	8 2.4219176-	7 5.2138662-	35.250	35.250
14- 3.7328011-	14- 8.9820921	8 2.7076526-	8 1.1087005-	35.500	35.500
14- 1.7385533-	14- 7.8742105	8 2.9182099-	8 1.8509656-	35.750	35.750
15- 2.7229172-	14- 6.6801360	8 3.0092151-	8 2.7579124-	36.000	36.000
15- 7.5065586	14- 5.4924142	8 2.9270197-	8 3.8316755-	36.250	36.250
14- 1.4127836	14- 4.3742482	8 2.6087602-	8 5.0636450-	36.500	36.500
14- 1.7905660	14- 3.3652600	8 1.9830538-	8 6.4307749-	36.750	36.750
14- 1.9521518	14- 2.4866845	7 9.7159720-	8 7.8914587-	37.000	37.000
14- 1.9562257	14- 1.7459551	7 5.0812654	8 9.3810812-	37.250	37.250
14- 1.8517645	14- 1.1406322	8 2.5387843	9 1.0807318-	37.500	37.500
14- 1.6783854	15- 6.6161526	8 5.1974729	9 1.2045580-	37.750	37.750
14- 1.4670990	15- 2.9572511	8 8.5481468	9 1.2934896-	38.000	38.000
14- 1.2413103	16- 2.7704750	9 1.2631894	9 1.3274589-	38.250	38.250
14- 1.0179087	15- 1.5829887-	9 1.7454978	9 1.2822529-	38.500	38.500
15- 8.0838221	15- 2.7768045-	9 2.2974496	9 1.1295502-	38.750	38.750
15- 6.1987159	15- 3.4467606-	9 2.9081869	8 8.3726761-	39.000	39.000
15- 4.5614270	15- 3.7194749-	9 3.5584118	8 3.7029452-	39.250	39.250
15- 3.1843101	15- 3.7038091-	9 4.2183719	8 3.0825222	39.500	39.500
15- 2.0616302	15- 3.4904439-	9 4.8457888	9 1.2351573	39.750	39.750
15- 1.1755392	15- 3.1526137-	9 5.3837872	9 2.4444934	40.000	40.000

Table 4B

Values of the Four $M_{\theta n}$ Functions Appearing in the Formula for M_{θ}

x	$M_{\theta 1}$	$M_{\theta 2}$	$M_{\theta 3}$	$M_{\theta 4}$
10.000	1.0159834-	6.4593130-	5- 1.0046332	6- 1.7068480-
10.250	1.2734816-	5.2045936-	6- 8.2280950	7- 2.2458400-
10.500	1.5393946-	3.2750497-	6- 6.4939970	6- 1.4647500
10.750	1.8015776-	5.6331620-	6- 4.6319030	6- 2.1755240
11.000	2.0440951-	3.0291050	6- 3.5860470	6- 2.4964430
11.250	2.2468566-	7.5831680	6- 2.4700695	6- 2.5433090
11.500	2.3853642-	1.3151645	6- 1.5772665	6- 2.4089650
11.750	2.4306361-	1.9746414	7- 8.8843700	6- 2.1653480
12.000	2.43493640-	2.7323760	7- 3.7767600	6- 1.8662010
12.250	2.1043877-	3.5767820	8- 1.6502300	6- 1.5500235
12.500	1.6555611-	4.4872570	7- 2.2334470-	6- 1.2429583
12.750	9.6110362-	5.4322770	7- 3.6813230-	7- 9.6146140
13.000	2.0472200	6.3674890	7- 4.4113000-	7- 7.1464470
13.250	1.3277712	7.2339000	7- 4.6215760-	7- 5.0626320
13.500	2.9931820	7.9562960	7- 4.4751830-	7- 3.3634313
13.750	5.0387360	8.4421200	7- 4.1018130-	7- 2.0247717
14.000	7.4711270	8.5809720	7- 3.6011370-	7- 1.0081801
14.250	1.0275874	8.2450420	7- 3.0468700-	8- 2.6817630
14.500	1.3410749	7.2907950	7- 2.4910550-	8- 2.4247430
14.750	1.6798471	5.5621710	7- 1.9682454-	8- 5.6921180-
15.000	2.0318994	2.8957524	7- 1.4993156-	8- 7.5347610-
15.250	2.3801753	8.7172200-	7- 1.0948169-	8- 8.3150410-
15.500	2.7018027	5.8932130-	8- 7.5783450-	8- 8.3386570-
15.750	2.9674392	1.2298116-	8- 4.8631660-	8- 7.8550630-
16.000	3.1407850	2.0175761-	8- 2.7492917-	8- 7.0611700-
16.250	3.1783285	2.9555290-	8- 1.1648572-	8- 6.1070620-
16.500	3.0294873	4.0382090-	10- 3.0020100-	8- 5.1026040-
16.750	2.6372401	5.2491070-	9- 7.3554410	8- 4.1242280-
17.000	1.9393698	6.5576630-	8- 1.2076920	8- 3.2215300-
17.250	8.7053070	7.9161060-	8- 1.4546690	8- 2.4232050-
17.500	6.3474350-	9.2562440-	8- 1.5356332	8- 1.7422731-
17.750	2.6379240-	1.0486281-	8- 1.5001086	8- 1.1805150-
18.000	5.1910920-	1.1488076-	8- 1.3882361	9- 7.3207360-
18.250	8.63301580-	1.2115011-	8- 1.2314904	9- 3.8632733-
18.500	1.2066644-	1.2190973-	8- 1.0536744	9- 1.3008704-
18.750	1.6377920-	1.1510739-	9- 8.7204500	10- 5.0778200
19.000	2.1196057-	9.8424790-	9- 6.9844470	9- 1.7020190
19.250	2.6395567-	6.9329380-	9- 5.4038240	9- 2.4116620
19.500	3.1780050-	2.5157810-	9- 4.0201430	9- 2.17525290
19.750	3.7068660-	3.6759260	9- 2.8499730	9- 2.8242430
20.000	4.1883170-	1.1892641	9- 1.8920719	9- 2.7097050
20.250	4.5736000-	2.2345900	9- 1.1332837	9- 2.4757230
20.500	4.8021440-	3.5180070	10- 5.5317760	9- 2.1743730
20.750	4.8011000-	5.0437700	10- 1.2759930	9- 1.8447612
21.000	4.4855340-	6.8019030	10- 1.6871940-	9- 1.5149763

Table 4B (continued)

	M ₀₁	M ₀₂	M ₀₃	M ₀₄
21.250	3 3.7594380-	3 8.7634760	10- 3.6033580-	9- 1.2040440
21.500	3 2.5178848-	4 1.0875417	10- 4.6991170-	10- 9.2376240
21.750	2 6.5059680-	4 1.3054970	10- 5.1751750-	10- 6.8036040
22.000	3 1.9528400	4 1.5183909	10- 5.2031780-	10- 4.7594460
22.250	3 5.3957210	4 1.7103008	10- 4.9252260-	10- 3.0970760
22.500	3 9.7647460	4 1.8607159	10- 4.4552380-	10- 1.7891369
22.750	4 1.5117983	4 1.9441475	10- 3.8815280-	11- 7.9679987
23.000	4 2.1470225	4 1.9299454	10- 3.2699950-	12- 7.5665600
23.250	4 2.8775660	4 1.7823777	10- 2.6675460-	11- 4.1990270-
23.500	4 3.6907860	4 1.4610665	10- 2.1055528-	11- 7.3377200-
23.750	4 4.5637660	3 9.2192110	10- 1.6030352-	11- 9.0610860-
24.000	4 5.4609350	3 1.1865740	10- 1.1695485-	11- 9.7227880-
24.250	4 6.3316410	3 9.9494900-	11- 8.0766740-	11- 9.6237120-
24.500	4 7.1077570	4 2.4619560-	11- 5.1508420-	11- 9.0118140-
24.750	4 7.7016000	4 4.3181690-	11- 2.8629919-	11- 8.0849890-
25.000	4 8.0043410	4 6.5869820-	11- 1.1395256-	11- 6.9958140-
25.250	4 7.8851870	4 9.2730670-	12- 1.0161690	11- 5.8574460-
25.500	4 7.1917630	5 1.2354881-	12- 9.4362570	11- 4.7497700-
25.750	4 5.7521200	5 1.5776142-	11- 1.4657510	11- 3.7255050-
26.000	4 3.3787254	5 1.9436216-	11- 1.7400810	11- 2.8159010-
26.250	3 1.2485480-	5 2.3179918-	11- 1.8297600	11- 2.0358036-
26.500	4 4.9541420-	5 2.6787010-	11- 1.7882705	11- 1.3880521-
26.750	5 1.1290232-	5 2.9962130-	11- 1.6594955	12- 8.6713120-
27.000	5 1.9282011-	5 3.2325680-	11- 1.4783042	12- 4.6214660-
27.250	5 2.9023660-	5 3.3407100-	11- 1.2714546	12- 1.5914315-
27.500	5 4.0527340-	5 3.2641790-	11- 1.0586605	13- 5.7138100
27.750	5 5.3690540-	5 2.9372764-	12- 8.53722870	12- 2.0198780
28.000	5 6.8258830-	5 2.2859723-	12- 6.6565380	12- 2.8986120
28.250	5 8.3784620-	5 1.2297060-	12- 4.9963800	12- 3.3383160
28.500	5 9.9582490-	4 3.1568660	12- 3.5800510	12- 3.4529640
28.750	6 1.1468386-	5 2.4336340	12- 2.4098025	12- 3.3386930
29.000	6 1.2779353-	5 5.2008810	12- 1.4734063	12- 3.0740630
29.250	6 1.3725054-	5 8.6796690	13- 7.4943710	12- 2.7212380
29.500	6 1.409992-	6 1.2907877	13- 2.1136693	12- 2.3276840
29.750	6 1.3657949-	6 1.7886955	13- 1.6933820-	12- 1.9281720
30.000	6 1.2113028-	6 2.3567754	13- 4.2099210-	12- 1.5468352
30.250	5 9.1436400-	6 2.9834080	13- 5.7017840-	12- 1.1991949
30.500	5 4.4006661-	6 3.6484630	13- 6.4081620-	13- 8.9400570
30.750	5 2.4793940	6 4.3213680	13- 6.5366440-	13- 6.3489970
31.000	6 1.1855193	6 4.9591140	13- 6.2616630-	13- 4.2180470
31.250	6 2.4054030	6 5.5043610	13- 5.7252170-	13- 2.5211213
31.500	6 3.9337240	6 5.8837940	13- 5.0391770-	13- 1.2162047
31.750	6 5.7856480	6 6.0068770	13- 4.2885700-	14- 2.5272050
32.000	6 7.9600490	6 5.7653630	13- 3.65352990-	14- 4.2297720-
32.250	7 1.0433201	6 5.0337950	13- 2.8219750-	14- 8.6365820-

Table 4B (continued)

x		$M_{\theta 1}$		$M_{\theta 2}$		$M_{\theta 3}$		$M_{\theta 4}$
32.500	7	1.3151621	6	3.6714160	13-	2.1756088-	13-	1.1185606-
32.750	7	1.6024018	6	1.5258185	13-	1.6110329-	13-	1.2317719-
33.000	7	1.8912810	6	1.5610980-	13-	1.1338953-	13-	1.2414043-
33.250	7	2.1625500	6	5.7444810-	14-	7.4322560-	13-	1.1793526-
33.500	7	2.3906298	7	1.1164688-	14-	4.3357610-	13-	1.0714871-
33.750	7	2.5428965	7	1.7931762-	14-	1.9672092-	14-	9.3810780-
34.000	7	2.5791764	7	2.6106040-	15-	2.2984440-	14-	7.9456540-
34.250	7	2.4515331	7	3.5674330-	15-	9.7768450	14-	6.5196940-
34.500	7	2.1045389	7	4.6521930-	14-	1.7542920	14-	5.1789960-
34.750	7	1.4761655	7	5.8400850-	14-	2.1917450	14-	3.9709260-
35.000	6	4.9945873	7	7.0894170-	14-	2.3718350	14-	2.9207290-
35.250	6	8.9475550-	7	8.3378600-	14-	2.3649920	14-	2.0370361-
35.500	7	2.7739580-	7	9.4986190-	14-	2.2299440	14-	1.3166017-
35.750	7	5.1986030-	8	1.0456829-	14-	2.0141377	15-	7.4818680-
36.000	7	8.2151480-	8	1.1066406-	14-	1.7546568	15-	3.1568722-
36.250	8	1.1847302-	8	1.1147872-	14-	1.4794142	18-	5.3707000-
36.500	8	1.6085439-	8	1.0487666-	14-	1.2084740	15-	2.1649850
36.750	8	2.0874044-	7	8.8394310-	15-	9.5540720	15-	3.5405410
37.000	8	2.6097440-	7	5.9282170-	15-	7.2856820	15-	4.2932670
37.250	8	3.1564160-	7	1.4582822-	15-	5.3226070	15-	4.5757620
37.500	8	3.6990060-	7	4.8746030	15-	3.6777010	15-	4.5189270
37.750	8	4.1981550-	8	1.3365317	15-	2.3423156	15-	4.2315240
38.000	8	4.6019750-	8	2.4275210	15-	1.2934786	15-	3.8010960
38.250	8	4.8446710-	8	3.7800580	16-	4.9963850	15-	3.2957810
38.500	8	4.8456360-	8	5.4033220	17-	7.4939200-	15-	2.7666160
38.750	8	4.5091790-	8	7.2912570	16-	4.6690340-	15-	2.2500620
39.000	8	3.7252450-	8	9.4169760	16-	7.1152060-	15-	1.7705346
39.250	8	2.3713465-	9	1.1726317	16-	8.4116930-	15-	1.3428291
39.500	7	3.1620890-	9	1.4130837	16-	8.8446530-	16-	9.7429550
39.750	8	2.5745620	9	1.6500389	16-	8.6585850-	16-	6.6675100
40.000	8	6.4303460	9	1.8655575	16-	8.0559380-	16-	4.1810850

Table 5B
Values of the Four W_n' Functions Appearing in the Formula for dw/dy

x	W_1'	W_2'	W_3'	W_4'
10.000	1 6.8483885-	2 1.0961471-	5- 6.5015634-	4- 2.3774286-
10.250	2 1.0200619-	2 1.1383052-	5- 1.8837595-	4- 2.0244529-
10.500	2 1.4196575-	2 1.1193033-	5- 1.3658016	4- 1.6724156-
10.750	2 1.8819178-	2 1.0157725-	5- 3.5061339	4- 1.3403213-
11.000	2 2.4000675-	1 8.0076880-	5- 4.7737331	4- 1.0400046-
11.250	2 2.9606781-	1 4.4420982-	5- 5.3770402	5- 7.7779091-
11.500	2 3.5419035-	8.6288950	5- 5.4941685	5- 5.5591521-
11.750	2 4.1115905-	1 8.2407532	5- 5.2729750	5- 3.7370756-
12.000	2 4.6253439-	2 1.8015063	5- 4.8327211	5- 2.2855444-
12.250	2 5.0246688-	2 3.0472681	5- 4.2667339	5- 1.1665812-
12.500	2 5.2353482-	2 4.5828591	5- 3.6456048	6- 3.3617552-
12.750	2 5.1662703-	2 6.4181478	5- 3.0205889	6- 2.5142890
13.000	2 4.7089738-	2 8.5459373	5- 2.4269619	6- 6.4071169
13.250	2 3.7382327-	3 1.0935520	5- 1.8871677	6- 8.7287980
13.500	2 2.1140683-	3 1.3525262	5- 1.4136603	6- 9.8467757
13.750	1 3.1437150	3 1.6214346	5- 1.0113813	5- 1.0078118
14.000	2 3.7025756	3 1.8853930	6- 6.7985953	6- 9.6882747
14.250	2 8.2015503	3 2.1238060	6- 4.1493952	6- 8.8930134
14.500	3 1.3945315	3 2.3095028	6- 2.1016209	6- 7.8623649
14.750	3 2.1034432	3 2.4079669	7- 5.7837600	6- 6.7258498
15.000	3 2.9515218	3 2.3767914	7- 5.0155242-	6- 5.5781799
15.250	3 3.9354378	3 2.1654715	6- 1.2179594-	6- 4.4850400
15.500	3 5.0408708	3 1.7156678	6- 1.6453656-	6- 3.4886632
15.750	3 6.2390371	2 9.6215870	6- 1.8506544-	6- 2.6128706
16.000	3 7.4828454	2 1.6533306-	6- 1.8918478-	6- 1.8675332
16.250	3 8.7027221	3 1.7392193-	6- 1.8177552-	6- 1.2524081
16.500	3 9.8023820	3 3.8297524-	6- 1.6682156-	7- 7.6029735
16.750	4 1.0654792	3 6.4991557-	6- 1.4747412-	7- 3.7960055
17.000	4 1.1098566	3 9.7938828-	6- 1.2614238-	8- 9.6315320
17.250	4 1.0935449	4 1.3734846-	6- 1.0459415-	7- 1.0446601-
17.500	3 9.9293840	4 1.8305515-	7- 8.4059908-	7- 2.3747170-
17.750	3 7.8078080	4 2.3437679-	7- 6.5334055-	7- 3.1651441-
18.000	3 4.2662048	4 2.8995186-	7- 4.8867231-	7- 3.5403263-
18.250	3 1.0232547-	4 3.4755777-	7- 3.4848821-	7- 3.6084867-
18.500	3 8.3978276-	4 4.0391802-	7- 2.3277634-	7- 3.4608654-
18.750	4 1.8183962-	4 4.5450213-	7- 1.4021210-	7- 3.1720970-
19.000	4 3.0669466-	4 4.9333630-	8- 6.8634525-	7- 2.8013329-
19.250	4 4.6067156-	4 5.1284038-	8- 1.5421147-	7- 2.3938475-
19.500	4 6.4468677-	4 5.0370808-	8- 2.2227929	7- 1.9829129-
19.750	4 8.5788197-	4 4.5486679-	8- 4.7085288	7- 1.5917143-
20.000	5 1.0969598-	4 3.5354735-	8- 6.1755537	7- 1.2352179-
20.250	5 1.3554135-	4 1.8549927-	8- 6.8587566	8- 9.2191297-
20.500	5 1.6226776-	3 6.4593250	8- 6.9627359	8- 6.5535051-
20.750	5 1.8832156-	4 4.1245010	8- 6.6601714	8- 4.3547693-
21.000	5 2.1155998-	4 8.7323414	8- 6.0923768	8- 2.5974649-

Table SB (continued)

x	W_1	W_2	W_3	W_4
21.250	5	5	8-	8-
21.500	5	5	8-	9-
21.750	5	5	8-	9-
22.000	5	5	9-	9-
22.250	5	5	9-	9-
22.500	4	5	8-	8-
22.750	4	5	8-	8-
23.000	5	5	8-	8-
23.250	5	5	8-	8-
23.500	5	6	9-	8-
24.000	6	6	10-	9-
24.250	6	5	9-	9-
24.500	6	5	9-	9-
24.750	6	5	9-	9-
25.000	6	5	9-	9-
25.250	6	6	9-	9-
25.500	6	6	9-	10-
25.750	6	6	9-	10-
26.000	6	6	9-	11-
26.250	6	6	9-	10-
26.500	6	6	9-	10-
26.750	6	7	10-	10-
27.000	6	7	10-	10-
27.250	6	7	10-	10-
27.500	6	7	10-	10-
27.750	6	7	10-	10-
28.000	7	7	10-	10-
28.250	7	7	10-	10-
28.500	7	7	10-	10-
28.750	7	7	10-	10-
29.000	7	7	10-	10-
29.250	7	6	10-	10-
29.500	7	6	10-	10-
29.750	7	6	10-	10-
30.000	8	7	11-	11-
30.250	8	7	11-	11-
30.500	8	8	11-	11-
30.750	8	8	11-	11-
31.000	7	8	11-	11-
31.250	7	8	11-	11-
31.500	7	8	11-	11-
31.750	7	8	11-	11-
32.000	8	8	11-	11-
32.250	8	8	11-	11-

Table 5B (continued)

x	W ₁	W ₂	W ₃	W ₄
32.500	8 3.8390587	8 5.1285230	12- 2.2332756	11- 1.5124533
32.750	8 5.5648767	8 5.2029248	13- 3.8105527-	11- 1.2752366
33.000	8 7.6010889	8 4.9299142	12- 2.1813948-	11- 1.0420928
33.250	8 9.9283000	8 4.1853414	12- 3.3190371-	12- 8.2420128
33.500	9 1.2497875	8 2.8278463	12- 3.9346095-	12- 6.2853672
33.750	9 1.5223357	7 7.0203050	12- 4.1538267-	12- 4.5877136
34.000	9 1.7971121	8 2.3560598-	12- 4.0853188-	12- 3.1608235
34.250	9 2.0550413	8 6.5105623-	12- 3.8200574-	12- 1.9984943
34.500	9 2.2703574	9 1.1913898-	12- 3.4318714-	12- 1.0823228
34.750	9 2.4097093	9 1.8690853-	12- 2.9787132-	13- 3.8638781
35.000	9 2.4314248	9 2.6917948-	12- 2.5044129-	13- 1.1908068-
35.250	9 2.851010	9 3.6597852-	12- 2.0406242-	13- 4.6495489-
35.500	9 1.9116450	9 4.7628459-	12- 1.6088392-	13- 6.8123189-
35.750	9 1.2439792	9 5.9766974-	12- 1.2223238-	13- 7.9570171-
36.000	8 2.0859736	9 7.2588872-	13- 8.8791630-	13- 8.3314179-
36.250	9 1.2717359-	9 8.5443429-	13- 6.0760956-	13- 8.1491308-
36.500	9 3.2739101-	9 9.7407450-	13- 3.7991285-	13- 7.5885742-
36.750	9 5.8687153-	10 1.0723877-	13- 2.0099192-	13- 6.7942084-
37.000	9 9.1131341-	10 1.1333456-	14- 6.5580906-	13- 5.8791349-
37.250	10 1.3040481-	10 1.1369862-	14- 3.2303478	13- 4.49285732-
37.500	10 1.7648075-	10 1.0592267-	14- 9.8825744	13- 4.0038193-
37.750	10 2.2882484-	9 8.7191186-	13- 1.3994972	13- 3.1462202-
38.000	10 2.8622394-	9 5.4317750-	13- 1.6118186	13- 2.3810186-
38.250	10 3.4659079-	8 3.8226020-	13- 1.6741787	13- 1.7209071-
38.500	10 4.0675390-	9 6.7934832	13- 1.6286730	13- 1.1691467-
38.750	10 4.6223704-	10 1.6455705	13- 1.5103810	14- 7.2225447-
39.000	10 5.0704525-	10 2.8933018	13- 1.3476209	14- 3.7222757-
39.250	10 5.3346758-	10 4.4485156	13- 1.1625029	14- 1.0834320-
39.500	10 5.3192759-	10 6.3255326	14- 9.67163020	15- 8.61451957
39.750	10 4.9090830-	10 8.5211480	14- 7.8688258	14- 2.0949765
40.000	10 3.9698176-	11 1.1007533	14- 6.61622106	14- 2.8767794

Table 6B
Values of the Four W_i Functions Appearing in the Formula for w

x		W_1		W_2		W_3		W_4
10.000	2	1.4541944	2	6.2967365-	4-	6.1068295-	3-	1.0704129
10.250	1	4.2850420	2	7.8217546-	4-	6.6538001-	4-	8.0191196
10.500	2	1.1150081-	2	9.4254110-	4-	6.7155544-	4-	5.7014983
10.750	2	3.2919571-	3	1.1013248-	4-	6.4267337-	4-	3.7615817
11.000	2	6.2198122-	3	1.2448332-	4-	5.9012153-	4-	2.1881223
11.250	3	1.0009191-	3	1.3542858-	4-	5.2323491-	5-	9.5493970
11.500	3	1.4751737-	3	1.4050059-	4-	4.4941298-	6-	2.6421430
11.750	3	2.0504001-	3	1.3657167-	4-	3.7430023-	5-	6.3805137-
12.000	3	2.7266817-	3	1.1980527-	4-	3.0200242-	4-	1.0806755-
12.250	3	3.4959793-	2	8.5641790-	4-	2.3531846-	4-	1.3426851-
12.500	3	4.3390756-	2	2.8836215-	4-	1.7597149-	4-	1.4625750-
12.750	3	5.2220307-	2	5.6432201	4-	1.2482835-	4-	1.4749620-
13.000	3	6.0922147-	3	1.7635428	5-	8.2099526-	4-	1.4099623-
13.250	3	6.8740409-	3	3.3716286	5-	4.7515149-	4-	1.2929670-
13.500	3	7.4646068-	3	5.4465294	5-	2.0475217-	4-	1.1447197-
13.750	3	7.7295491-	3	8.0352036	7-	1.7352960-	5-	9.8160225-
14.000	3	7.4995376-	4	1.1164900	5-	1.4303184	5-	8.1605846-
14.250	3	6.5679707-	4	1.4832075	5-	2.3898992	5-	6.5709427-
14.500	3	4.6906220-	4	1.8988821	5-	2.9532594	5-	5.1080615-
14.750	3	1.5880641-	4	2.3526610	5-	3.2058538	5-	3.8090899-
15.000	3	3.0479679	4	2.8257647	5-	3.2242650	5-	2.6922884-
15.250	3	9.5431080	4	3.2894207	5-	3.0748800	5-	1.7615083-
15.500	4	1.8222370	4	3.7026357	5-	2.8134876	5-	1.0101414-
15.750	4	2.9384116	4	4.0099613	5-	2.4854987	6-	4.2443750-
16.000	4	4.3264630	4	4.1394100	5-	2.1266271	7-	1.3754410
16.250	4	5.9991487	4	4.0007013	5-	1.7638833	6-	3.2480563
16.500	4	7.9524844	4	3.4842117	5-	1.4167049	6-	5.2964598
16.750	5	1.0158602	4	2.4609757	5-	1.0981448	6-	6.4854437
17.000	5	1.2557214	3	7.8416810	6-	8.1605654	6-	7.0027767
17.250	5	1.5045909	4	1.7072953-	6-	5.7418670	6-	7.0161007
17.500	5	1.7469453	4	5.1824666-	6-	3.7316602	6-	6.6702227
17.750	5	1.9608333	4	9.8086382-	6-	2.1137770	6-	6.0863954
18.000	5	2.1167419	5	1.5737427-	7-	8.5684160	6-	5.3629414
18.250	5	2.1765402	5	2.3085882-	8-	7.9753990-	6-	4.5768894
18.500	5	2.0926420	5	3.1912018-	7-	7.4113234-	6-	3.7861903
18.750	5	1.8075140	5	4.2183897-	6-	1.1733393-	6-	3.0323068
19.000	5	1.2537679	5	5.3742195-	6-	1.4207460-	6-	2.3428528
19.250	4	3.5505585	5	6.6256276-	6-	1.5242745-	6-	1.7341841
19.500	4	9.7194818-	5	7.9173684-	6-	1.5203236-	6-	1.2138320
19.750	5	2.8141257-	5	9.1665040-	6-	1.4402246-	7-	7.8266164
20.000	5	5.2567200-	6	1.0256635-	6-	1.3101086-	7-	4.3675337
20.250	5	8.3759500-	6	1.1032097-	6-	1.1510892-	7-	1.6898985
20.500	6	1.2229075-	6	1.1292752-	7-	9.7963613-	8-	2.9660414-
20.750	6	1.6841538-	6	1.0789877-	7-	8.0808167-	7-	1.6912965-
21.000	6	2.2190960-	5	9.2240940-	7-	6.4518783-	7-	2.5948396-

Table 6B (continued)

x		W_1	W_2	W_3	W_4
21.250	6	2.8187657-	5 6.2461926-	7- 4.9673850-	7- 3.1037280-
21.500	6	3.4651904-	5 1.4623352-	7- 3.6610464-	7- 3.3065846-
21.750	6	4.1288272-	5 5.5550376	7- 2.5477075-	7- 3.2819129-
22.000	6	4.7657286-	6 1.5248905	7- 1.6280826-	7- 3.0970476-
22.250	6	5.3146098-	6 2.8050005	8- 8.9279898-	7- 2.8079515-
22.500	6	5.6939797-	6 4.4338115	8- 3.2580099-	7- 2.4596511-
22.750	6	5.7995203-	6 6.4389980	9- 9.2887030	7- 2.0871272-
23.000	6	5.5021380-	6 8.8312446	8- 3.8500911	7- 1.7164377-
23.250	6	4.6470791-	7 1.1595971	8- 5.7245214	7- 1.3659711-
23.500	6	3.0545780-	7 1.4683278	8- 6.7608858	7- 1.0477456-
23.750	5	5.2281050-	7 1.7996318	8- 7.1500442	8- 7.6863784-
24.000	6	3.1661969	7 2.1378103	8- 7.0604412	8- 5.3152769-
24.250	6	8.2368049	7 2.4597288	8- 6.6359834	8- 3.3630963-
24.500	7	1.4905208	7 2.7333268	8- 5.9958542	8- 1.8076933-
24.750	7	2.3359111	7 2.9161795	8- 5.2355891	9- 6.1307581-
25.000	7	3.3730785	7 2.9542354	8- 4.4290527	9- 2.6472758
25.250	7	4.6062394	7 2.7808677	8- 3.6309905	9- 8.7309230
25.500	7	6.0263214	7 2.3165134	8- 2.8797752	8- 1.2593897
25.750	7	7.6058539	7 1.4691460	8- 2.2002003	8- 1.4685585
26.000	7	9.2929828	6 1.3589380	8- 1.6061787	8- 1.5415180
26.250	8	1.1004805	7 1.7937642-	8- 1.1031878	8- 1.5142411
26.500	8	1.2620135	7 4.4328281-	9- 6.9044749	8- 1.4173531
26.750	8	1.3972126	7 7.8891644-	9- 3.6278047	8- 1.2761162
27.000	8	1.4841043	8 1.2254925-	9- 1.1216198	8- 1.1107045
27.250	8	1.4948078	8 1.7592556-	10- 7.1042045-	9- 9.3664906
27.500	8	1.3951019	8 2.3917063-	9- 1.9711167-	9- 7.6539262
27.750	8	1.1442739	8 3.1173960-	9- 2.7625760-	9- 6.0489952
28.000	7	6.9542101	8 3.9213134-	9- 3.1811830-	9- 4.6025865
28.250	5	3.6464300-	8 4.7758667-	9- 3.3143146-	9- 3.3425973
28.500	8	1.0087082-	8 5.6374846-	9- 3.2385001-	9- 2.2792362
28.750	8	2.3764056-	8 6.4429892-	9- 3.0186532-	9- 1.4096411
29.000	8	4.1602736-	8 7.1059102-	9- 2.7081212-	10- 7.2183872
29.250	8	6.4052561-	8 7.5129111-	9- 2.3493373-	10- 1.9802574
29.500	8	9.1405065-	8 7.5207930-	9- 1.9748186-	10- 1.8282154-
29.750	9	1.2370239-	8 6.9544420-	9- 1.6083945-	10- 4.4292707-
30.000	9	1.6062567-	8 5.6063772-	9- 1.2665133-	10- 6.0422186-
30.250	9	2.0136116-	8 3.2385011-	10- 9.5956191-	10- 6.8730514-
30.500	9	2.4444709-	7 4.1294080	10- 6.9309758-	10- 7.1077516-
30.750	9	2.8760394-	8 5.6283194	10- 4.6897113-	10- 6.9085552-
31.000	9	3.2755118-	9 1.2690368	10- 2.8631922-	10- 6.4125914-
31.250	9	3.5982312-	9 2.1863489	10- 1.4239887-	10- 5.7321536-
31.500	9	3.7859596-	9 3.3365566	11- 3.3277916-	10- 4.9561706-
31.750	9	3.7653995-	9 4.7330873	11- 4.5614401	10- 4.1524916-
32.000	9	3.4472683-	9 6.3763422	11- 9.9066445	10- 3.3705452-
32.250	9	2.7261681-	9 8.2479784	10- 1.3177430	10- 2.6441850-

Table 6B (continued)

x	w_1	w_2	w_3	w_4
32.500	9	10	10	10
32.750	8	10	10	10
33.000	9	10	10	11
33.250	9	10	10	11
33.500	10	10	10	11
33.750	10	10	10	12
34.000	10	10	11	11
34.250	10	10	11	11
34.500	10	10	11	11
34.750	10	9	11	11
35.000	10	9	11	11
35.250	10	10	11	11
35.500	10	10	11	11
35.750	10	10	12	11
36.000	10	10	13	11
36.250	10	11	12	11
36.500	10	11	12	11
36.750	10	11	12	11
37.000	10	11	12	12
37.250	10	11	12	12
37.500	10	11	12	12
37.750	11	11	12	12
38.000	11	11	12	12
38.250	11	11	12	12
38.500	11	11	12	12
38.750	11	11	12	12
39.000	12	11	12	12
39.250	12	11	12	12
39.500	12	11	12	12
39.750	12	11	13	12
40.000	12	11	13	12

Table 7B

Values of the Four V_n Functions Appearing in the Formula for v

v	V_1	V_2	V_3	V_4
10.000	5.4101260	3.1845503	4- 1.1087876	6- 3.0048510-
10.250	7.6159100	3.7838254-	5- 8.9834029	5- 1.3081767
10.500	5.7157950-	4.4030974-	5- 7.0662893	5- 2.3137923
10.750	1.4380222-	5.0131431-	5- 5.3817608	5- 2.68595172
11.000	2.5600527-	5.5728281-	5- 3.9471412	5- 3.0664748
11.250	3.9735448-	6.0267293-	5- 2.7602002	5- 3.0344623
11.500	5.7104388-	6.3027260-	5- 1.8057589	5- 2.68435672
11.750	7.7948190-	6.3097270-	5- 1.0608034	5- 2.5563100
12.000	1.0237824-	5.9357560-	6- 4.69832339	5- 2.2200207
12.250	1.3031272-	5.0466870-	7- 9.0100030	5- 1.6692517
12.500	1.6139867-	3.4860160-	6- 1.9135969-	5- 1.5280817
12.750	1.9491969-	1.0761230-	6- 3.7156298-	5- 1.2122283
13.000	2.2968955-	2.3783950	6- 4.7329021-	6- 9.3091902
13.250	2.6393320-	7.0847120	6- 5.1624292-	6- 6.08850025
13.500	2.9515861-	1.3252268	6- 5.1697196-	6- 4.68578544
13.750	3.2002445-	2.1079079	6- 4.8899887-	6- 3.2115476
14.000	3.3421166-	3.0732903	6- 4.4306040-	6- 1.9142923
14.250	3.6230932-	4.22326503	6- 3.8742454-	7- 9.2546240
14.500	3.07713130-	5.65886347	6- 3.2823555-	7- 2.0063853
14.750	2.5267775-	7.1313798	6- 2.6986489-	7- 3.0476044-
15.000	1.5817103-	8.8338879	6- 2.1524208-	7- 6.3301567-
15.250	1.418920-	1.0646680	6- 1.6615711-	7- 8.2255210-
15.500	1.9007079	1.2491698	6- 1.2352907-	7- 9.0709401-
15.750	4.6575559	1.4255727	7- 8.7633602-	7- 9.1534088-
16.000	8.2371620	1.5783560	7- 5.8292941-	7- 8.7101382-
16.250	1.2736095	1.6871132	7- 3.5030214-	7- 7.9316190-
16.500	1.8227075	1.7259370	7- 1.7189975-	7- 6.9661617-
16.750	2.4743792	1.6629392	8- 4.0302200-	7- 5.9252464-
17.000	3.2261903	1.4599784	8- 5.2099830	7- 4.8892202-
17.250	4.0676298	1.0727389	7- 1.1263574	7- 3.9127928-
17.500	4.9774635	4.5128260	7- 1.4804754	7- 3.0301826-
17.750	5.9206994	4.5877280-	7- 1.6431235	7- 2.2597633-
18.000	6.8452972	1.7142451-	7- 1.6656131	7- 1.6080568-
18.250	7.6786890	3.3713602-	7- 1.5906989	7- 1.0731206-
18.500	8.3243380	5.4815011-	7- 1.4529638	8- 6.4731178-
18.750	8.6585080	8.0854825-	7- 1.2795345	8- 3.6194695-
19.000	8.5276680	1.1206190-	7- 1.0909597	9- 7.6743620-
19.250	7.7469790	1.4839439-	8- 9.0216580	9- 9.4418990
19.500	6.1002940	1.8942832-	8- 7.62342272	8- 2.0710584
19.750	3.3425040	2.83422755-	8- 5.6124695	8- 2.7348352
20.000	7.9506500-	2.8119637-	8- 4.1922482	8- 3.0441188
20.250	6.5953330-	3.2791560-	8- 2.9873897	8- 3.0927027
20.500	1.4341141-	3.7097093-	8- 1.9958086	8- 2.99591586
20.750	2.4294911-	4.0577968-	8- 1.2045909	8- 2.7073706
21.000	3.6671348-	4.2643097-	9- 5.9406048	8- 2.3876780

Table 7B (continued)

V ₄	V ₃	V ₂	V ₁	%	
21.250	4	4.2555007	4	5.1601868	21.250
21.500	4	3.9421571	4	6.090238	21.500
21.750	4	3.219358	4	8.8959045	21.750
22.000	5	1.9683550	5	1.078606	22.000
22.250	5	5.7296700	5	1.3383214	22.250
22.500	5	2.6525929	5	1.5696204	22.500
22.750	4	6.3011081	5	1.7855933	22.750
23.000	5	1.019157	5	1.9644151	23.000
23.250	5	1.6915651	5	2.0778087	23.250
23.500	5	2.4060379	5	2.0903647	23.500
23.750	5	3.2462651	5	1.9591190	23.750
24.000	5	4.2045233	5	1.6334805	24.000
24.250	5	5.2613846	5	1.0556970	24.250
24.500	5	6.3821966	4	1.6200940	24.500
24.750	5	7.5132162	5	1.1152497	24.750
25.000	5	8.5775280	5	2.8444097	25.000
25.250	5	9.4708570	5	5.0898048	25.250
25.500	6	1.0057667	5	7.9054439	25.500
25.750	6	1.0167917	6	1.1326819	25.750
26.000	6	9.5948450	6	1.5360546	26.000
26.250	5	8.0946040	6	1.9971833	26.250
26.500	5	5.3883690	6	2.5069651	26.500
26.750	5	1.1679020	6	3.00489874	26.750
27.000	5	4.6894930	6	3.5976445	27.000
27.250	6	1.3130326	6	4.1161515	27.250
27.500	6	2.3852585	6	4.5545469	27.500
27.750	6	3.7325238	6	4.8477709	27.750
28.000	6	5.3723601	6	4.9140819	28.000
28.250	6	7.3084752	6	4.6540150	28.250
28.500	6	9.5246720	6	3.9501492	28.500
28.750	7	1.1977705	6	2.6681323	28.750
29.000	7	1.4589152	5	6.5934790	29.000
29.250	7	1.7236315	6	2.2342897	29.250
29.500	7	1.9742653	6	6.1728094	29.500
29.750	7	2.61868054	7	1.1307374	29.750
30.000	7	2.3299763	7	1.7765644	30.000
30.250	7	2.3644564	7	2.5632619	30.250
30.500	7	2.2423771	7	3.4926628	30.500
30.750	7	1.9072345	7	4.5570251	30.750
31.000	7	1.2943640	7	5.7355683	31.000
31.250	6	3.3224020	7	6.9905398	31.250
31.500	7	1.0551941	7	8.2628844	31.500
31.750	7	2.9449003	7	9.4675870	31.750
32.000	7	5.4095215	8	1.0489027	32.000
32.250	7	8.5102851	8	1.1176570	32.250
1.0369540	11	1.0369540	11	1.0369540	1.0369540
7.3336841	12	8.1301846	12	7.3336841	7.3336841
4.8334785	12	7.67403190	12	4.8334785	4.8334785
2.8386392	12	7.0564995	12	2.8386392	2.8386392
1.3012032	12	6.2049605	12	1.3012032	1.3012032
3.1936078	11	7.0483720	11	3.1936078	3.1936078
2.7224876	11	1.1325791	11	2.7224876	2.7224876
2.2500083	11	3.0350546	11	2.2500083	2.2500083
1.8017973	11	5.7667789	11	1.8017973	1.8017973
1.3943534	11	7.3558829	11	1.3943534	1.3943534
3.7332844	11	7.2487352	11	3.7332844	3.7332844
4.1162081	11	5.4015992	11	4.1162081	4.1162081
4.1618624	11	3.8312310	11	4.1618624	4.1618624
3.9711115	11	2.5367420	11	3.9711115	3.9711115
3.6265331	11	1.5027933	11	3.6265331	3.6265331
7.9659749	11	1.8738853	11	7.9659749	7.9659749
3.8069741	11	1.6520589	11	3.8069741	3.8069741
7.1952350	12	1.4098504	12	7.1952350	7.1952350
1.4600317	11	1.1664597	11	1.4600317	1.4600317
2.8936062	11	9.3526097	11	2.8936062	2.8936062
1.03350069	10	2.0491893	10	1.03350069	1.03350069
2.0086363	10	2.1438310	10	2.0086363	2.0086363
2.8254082	10	2.1147605	10	2.8254082	2.8254082
3.7857079	10	1.9093643	10	3.7857079	3.7857079
4.8790095	10	1.4652848	10	4.8790095	4.8790095
6.0798538	10	7.1090240	10	6.0798538	6.0798538
7.3431445	10	4.3326800	10	7.3431445	7.3431445
8.5989080	10	2.0519328	10	8.5989080	8.5989080
9.7466078	10	4.2308009	10	9.7466078	9.7466078
1.0649332	9	7.0504257	9	1.0649332	1.0649332
1.1128094	9	1.0577659	9	1.1128094	1.1128094
1.0956933	9	1.4854369	9	1.0956933	1.0956933
9.8594590	10	1.9883106	10	9.8594590	9.8594590
7.5076226	10	2.5609251	10	7.5076226	7.5076226
3.5240758	10	3.1899710	10	3.5240758	3.5240758
2.5106613	10	3.18518248	10	2.5106613	2.5106613
1.01044609	9	4.5097382	9	1.01044609	1.01044609
2.2532355	9	5.1108219	9	2.2532355	2.2532355
3.7402719	9	5.5829004	9	3.7402719	3.7402719
5.6014096	9	5.8314805	9	5.6014096	5.6014096
7.8594768	9	5.7370213	9	7.8594768	7.8594768
1.0516675	8	5.1529823	8	1.0516675	1.0516675
1.3545168	8	3.9050778	8	1.3545168	1.3545168
1.6875660	8	1.7922887	8	1.6875660	1.6875660
2.0384109	8	1.4095215	8	2.0384109	2.0384109

Table 7B (continued)

x		V_1		V_2		V_3		V_4
32.500	8	1.1340926-	8	1.2287810	12-	5.2822966-	13-	1.6348439
32.750	8	1.0751685-	8	1.6750483	12-	4.3594049-	13-	6.3587706-
33.000	7	9.1369280-	8	2.1860380	12-	3.4855478-	12-	1.1575330-
33.250	7	6.1856860-	8	2.7516739	12-	2.6923259-	12-	1.4584091-
33.500	7	1.5541740-	8	3.3536879	12-	1.9974129-	12-	1.5898183-
33.750	7	5.1228481	8	3.9635294	12-	1.4078518-	12-	1.5964418-
34.000	8	1.4214479	8	4.5401574	13-	9.2292440-	12-	1.5159707-
34.250	8	2.6068395	8	5.0277805	13-	5.3656496-	12-	1.3792412-
34.500	8	4.0976526	8	5.3537641	13-	2.3930946-	12-	1.2106817-
34.750	8	5.9130630	8	5.4268961	14-	1.9835530-	12-	1.0289646-
35.000	8	8.0566192	8	5.1362245	13-	1.3386661	13-	8.4777423-
35.250	9	1.0509462	8	4.3509155	13-	2.3364739	13-	6.7659601-
35.500	9	1.3222310	8	2.9214624	13-	2.9061600	13-	5.2149331-
35.750	9	1.6106380	7	6.8278920	13-	3.1477473	13-	3.8582590-
36.000	9	1.9023256	8	2.5402507-	13-	3.1482556	13-	2.7089780-
36.250	9	2.1774255	8	6.9242901-	13-	2.9810337	13-	1.7651272-
36.500	9	2.4089781	9	1.2635213-	13-	2.7060124	13-	1.0144092-
36.750	9	2.5619187	9	1.9811528-	13-	2.3706215	14-	4.3800499-
37.000	9	2.5922520	9	2.8542802-	13-	2.0110676	15-	1.3552060-
37.250	9	2.4465358	9	3.8842752-	13-	1.6538193	14-	2.8258750
37.500	9	2.0618090	9	5.0616344-	13-	1.3171767	14-	4.7368163
37.750	9	1.3662175	9	6.3621295-	13-	1.0127774	14-	5.8150590
38.000	8	2.8054240	9	7.7424360-	14-	7.4700351	14-	6.2563854
38.250	9	1.2791112-	9	9.1352660-	14-	5.2224664	14-	6.2309117
38.500	9	3.3971346-	10	1.0444286-	14-	3.3799072	14-	5.8818424
38.750	9	6.1524561-	10	1.1538977-	14-	1.9172474	14-	5.3260572
39.000	9	9.6105148-	10	1.2249908-	15-	7.9681500	14-	4.6558821
39.250	10	1.3812800-	10	1.2364763-	16-	2.5789180-	14-	3.9416821
39.500	10	1.8763805-	10	1.1625938-	15-	5.9730005-	14-	3.2347834
39.750	10	2.4415279-	9	9.7304580-	15-	9.6359313-	14-	2.5705232
40.000	10	3.0647577-	9	6.3330340-	14-	1.1675113-	14-	1.9712515

Table 8B
Values of the Four Auxiliary K-Functions

x	K_1	K_2	K_3	K_4
10.000	2- 4.0000000	3- 1.1200000	3.2188758	2.9188758
10.250	2- 3.8072576	3- 1.0146647	3.2682610	2.9682610
10.500	2- 3.6281179	4- 9.2142673	3.3164561	3.0164561
10.750	2- 3.4613304	4- 8.3865656	3.3635171	3.0635171
11.000	2- 3.3057851	4- 7.6497505	3.4094961	3.1094961
11.250	2- 3.1604938	4- 6.9921047	3.4544418	3.1544418
11.500	2- 3.0245747	4- 6.4036365	3.4983997	3.1983997
11.750	2- 2.8972386	4- 5.8757941	3.5414121	3.2414121
12.000	2- 2.7777778	4- 5.4012347	3.5835189	3.2835189
12.250	2- 2.6655560	4- 4.9736321	3.6247575	3.3247575
12.500	2- 2.5600000	4- 4.5875200	3.6651629	3.3651629
12.750	2- 2.4605921	4- 4.2381594	3.7047681	3.4047681
13.000	2- 2.3668639	4- 3.9214313	3.7436043	3.4436043
13.250	2- 2.2783909	4- 3.6337455	3.7817007	3.4817007
13.500	2- 2.1947874	4- 3.3719642	3.8190850	3.5190850
13.750	2- 2.1157025	4- 3.1333379	3.8557832	3.5557832
14.000	2- 2.0408163	4- 2.9154518	3.8918203	3.5918203
14.250	2- 1.9698369	4- 2.7161802	3.9272194	3.6272194
14.500	2- 1.9024970	4- 2.5336464	3.9620029	3.6620029
14.750	2- 1.8385521	4- 2.3661917	3.9961918	3.6961918
15.000	2- 1.7777778	4- 2.2123457	4.0298060	3.7298060
15.250	2- 1.7199678	4- 2.0708024	4.0628646	3.7628646
15.500	2- 1.6649324	4- 1.9403999	4.0953856	3.7953856
15.750	2- 1.6124969	4- 1.8201023	4.1273863	3.8273863
16.000	2- 1.5625000	4- 1.7089843	4.1588830	3.8588830
16.250	2- 1.5147929	4- 1.6062183	4.1898914	3.8898914
16.500	2- 1.4692378	4- 1.5110618	4.2204264	3.9204264
16.750	2- 1.4257073	4- 1.4228489	4.2505021	3.9505021
17.000	2- 1.3840830	4- 1.3409800	4.2801323	3.9801323
17.250	2- 1.3442554	4- 1.2649152	4.3093299	4.0093299
17.500	2- 1.3061224	4- 1.1941690	4.3381074	4.0381074
17.750	2- 1.2695894	4- 1.1283000	4.3664766	4.0664766
18.000	2- 1.2345679	4- 1.0669105	4.3944491	4.0944491
18.250	2- 1.2009758	4- 1.0096400	4.4220358	4.1220358
18.500	2- 1.1687363	5- 9.5616115	4.4492471	4.1492471
18.750	2- 1.1377778	5- 9.0617681	4.4760931	4.1760931
19.000	2- 1.1080332	5- 8.5941625	4.5025836	4.2025836
19.250	2- 1.0794400	5- 8.1563349	4.5287277	4.2287277
19.500	2- 1.0519395	5- 7.7460369	4.5545345	4.2545345
19.750	2- 1.0254767	5- 7.3612168	4.5800126	4.2800126
20.000	2- 1.0000000	5- 7.0000000	4.6051701	4.3051701
20.250	3- 9.7546106	5- 6.6606700	4.6300152	4.3300152
20.500	3- 9.5181440	5- 6.3416546	4.6545554	4.3545554
20.750	3- 9.2901727	5- 6.0415116	4.6787981	4.3787981
21.000	3- 9.0702948	5- 5.7589174	4.7027505	4.4027505

Table 8B (continued)

x	K_1	K_2	K_3	K_4
21.250	3- 8.8581315	5- 5.4926546	4.7264194	4.4264194
21.500	3- 8.6533261	5- 5.2416037	4.7498115	4.4498115
21.750	3- 8.4555423	5- 5.0047337	4.7729332	4.4729332
22.000	3- 8.2644628	5- 4.7810942	4.7957905	4.4957905
22.250	3- 8.0797879	5- 4.5698081	4.8183897	4.5183897
22.500	3- 7.9012346	5- 4.3700656	4.8407362	4.5407362
22.750	3- 7.7285352	5- 4.1811179	4.8628359	4.5628359
23.000	3- 7.5614367	5- 4.0022728	4.8846940	4.5846940
23.250	3- 7.3996994	5- 3.8328886	4.9063159	4.6063159
23.500	3- 7.2430964	5- 3.6723712	4.9277064	4.6277064
23.750	3- 7.0914127	5- 3.5201694	4.9488707	4.6488707
24.000	3- 6.9444444	5- 3.3757716	4.9698133	4.6698133
24.250	3- 6.8019981	5- 3.2387025	4.9905389	4.6905389
24.500	3- 6.6638900	5- 3.1085201	5.0110518	4.7110518
24.750	3- 6.5299459	5- 2.9848135	5.0313566	4.7313566
25.000	3- 6.4000000	5- 2.8672000	5.0514572	4.7514572
25.250	3- 6.2738947	5- 2.7553229	5.0713579	4.7713579
25.500	3- 6.1514802	5- 2.6488496	5.0910625	4.7910625
25.750	3- 6.0326138	5- 2.5474700	5.1105749	4.8105749
26.000	3- 5.9171598	5- 2.4508946	5.1298987	4.8298987
26.250	3- 5.8049887	5- 2.3588526	5.1490376	4.8490376
26.500	3- 5.6959772	5- 2.2710909	5.1679951	4.8679951
26.750	3- 5.5900079	5- 2.1873732	5.1867746	4.8867746
27.000	3- 5.4869684	5- 2.1074775	5.2053793	4.9053793
27.250	3- 5.3867520	5- 2.0311968	5.2238127	4.9238127
27.500	3- 5.2892562	5- 1.9583362	5.2420776	4.9420776
27.750	3- 5.1943836	5- 1.8887135	5.2601773	4.9601773
28.000	3- 5.1020408	5- 1.8221574	5.2781146	4.9781146
28.250	3- 5.0121388	5- 1.7585075	5.2958925	4.9958925
28.500	3- 4.9245922	5- 1.6976126	5.3135138	5.0135138
28.750	3- 4.8393195	5- 1.6393309	5.3309812	5.0309812
29.000	3- 4.7562426	5- 1.5835291	5.3482973	5.0482973
29.250	3- 4.6752867	5- 1.5300814	5.3654648	5.0654648
29.500	3- 4.5963804	5- 1.4788699	5.3824861	5.0824861
29.750	3- 4.5194548	5- 1.4297830	5.3993639	5.0993639
30.000	3- 4.4444444	5- 1.3827160	5.4161004	5.1161004
30.250	3- 4.3712861	5- 1.3375699	5.4326980	5.1326980
30.500	3- 4.2999194	5- 1.2942515	5.4491590	5.1491590
30.750	3- 4.2302862	5- 1.2526725	5.4654856	5.1654856
31.000	3- 4.1623309	5- 1.2127499	5.4816800	5.1816800
31.250	3- 4.0960000	5- 1.1744051	5.4977444	5.1977444
31.500	3- 4.0312421	5- 1.1375639	5.5136807	5.2136807
31.750	3- 3.9680079	5- 1.1021561	5.5294911	5.2294911
32.000	3- 3.9062500	5- 1.0681152	5.5451774	5.2451774
32.250	3- 3.8459227	5- 1.0353785	5.5607417	5.2607417

Table 8B (continued)

x	K_1	K_2	K_3	K_4
32.500	3- 3.7869822	5- 1.0038864	5.5761858	5.2761858
32.750	3- 3.7293864	6- 9.7358261	5.5915115	5.2915115
33.000	3- 3.6730946	6- 9.4441368	5.6067207	5.3067207
33.250	3- 3.6180677	6- 9.1632898	5.6218151	5.3218151
33.500	3- 3.5642682	6- 8.8928056	5.6367965	5.3367965
33.750	3- 3.5116598	6- 8.6322285	5.6516664	5.3516664
34.000	3- 3.4602076	6- 8.3811259	5.6664266	5.3664266
34.250	3- 3.4098780	6- 8.1390876	5.6810787	5.3810787
34.500	3- 3.3606385	6- 7.9057237	5.6956242	5.3956242
34.750	3- 3.3124579	6- 7.6806639	5.7100648	5.4100648
35.000	3- 3.2653061	6- 7.4635568	5.7244017	5.4244017
35.250	3- 3.2191540	6- 7.2540664	5.7386367	5.4386367
35.500	3- 3.1739734	6- 7.0518749	5.7527710	5.4527710
35.750	3- 3.1297374	6- 6.8566793	5.7668061	5.4668061
36.000	3- 3.0864198	6- 6.6681910	5.7807435	5.4807435
36.250	3- 3.0439952	6- 6.4861347	5.7945844	5.4945844
36.500	3- 3.0024395	6- 6.3102500	5.8083301	5.5083301
36.750	3- 2.9617289	6- 6.1402866	5.8219821	5.5219821
37.000	3- 2.9218408	6- 5.9760075	5.8355414	5.5355414
37.250	3- 2.8827530	6- 5.8171854	5.8490095	5.5490095
37.500	3- 2.8444444	6- 5.6636047	5.8623875	5.5623875
37.750	3- 2.8068944	6- 5.5150593	5.8756766	5.5756766
38.000	3- 2.7700831	6- 5.3713522	5.8888779	5.5888779
38.250	3- 2.7339912	6- 5.2322955	5.9019927	5.6019927
38.500	3- 2.6986001	6- 5.0977097	5.9150221	5.6150221
38.750	3- 2.6638918	6- 4.9674237	5.9279671	5.6279671
39.000	3- 2.6298488	6- 4.8412733	5.9408289	5.6408289
39.250	3- 2.5964542	6- 4.7191021	5.9536085	5.6536085
39.500	3- 2.5636917	6- 4.6007606	5.9663069	5.6663069
39.750	3- 2.5315454	6- 4.4861055	5.9789253	5.6789253
40.000	3- 2.5000000	6- 4.3750000	5.9914645	5.6914645

Table 9B
Values of the Four Auxiliary P-Functions

x	$P_1 = x^2/4$	P_2	P_3	P_4
10.000	1 2.5000000	1 5.0000000	2 9.3750000	2 1.2500000
10.250	1 2.6265625	1 5.2531250	3 1.0348246	2 1.3797661
10.500	1 2.7562500	1 5.5125000	3 1.1395371	2 1.5193828
10.750	1 2.8890625	1 5.7781250	3 1.2520023	2 1.6693364
11.000	1 3.0250000	1 6.0500000	3 1.3725938	2 1.8301250
11.250	1 3.1640625	1 6.3281250	3 1.5016938	2 2.0022584
11.500	1 3.3062500	1 6.6125000	3 1.6396933	2 2.1862578
11.750	1 3.4515625	1 6.9031250	3 1.7869926	2 2.3826568
12.000	1 3.6000000	1 7.2000000	3 1.9440000	2 2.5920000
12.250	1 3.7515625	1 7.5031250	3 2.1111331	2 2.8148442
12.500	1 3.9062500	1 7.8125000	3 2.2888183	2 3.0517578
12.750	1 4.0640625	1 8.1281250	3 2.4774906	2 3.3033208
13.000	1 4.2250000	1 8.4500000	3 2.6775937	2 3.5701250
13.250	1 4.3890625	1 8.7781250	3 2.8895805	2 3.8527740
13.500	1 4.5562500	1 9.1125000	3 3.1139121	2 4.1518828
13.750	1 4.7265625	1 9.4531250	3 3.3510589	2 4.4680786
14.000	1 4.9000000	1 9.8000000	3 3.6015000	2 4.8020000
14.250	1 5.0765625	2 1.0153125	3 3.8657230	2 5.1542974
14.500	1 5.2562500	2 1.0512500	3 4.1442246	2 5.5256328
14.750	1 5.4390625	2 1.0878125	3 4.4375101	2 5.9166802
15.000	1 5.6250000	2 1.1250000	3 4.7460937	2 6.3281250
15.250	1 5.8140625	2 1.1628125	3 5.0704984	2 6.7606646
15.500	1 6.0062500	2 1.2012500	3 5.4112558	2 7.2150078
15.750	1 6.2015625	2 1.2403125	3 5.7689065	2 7.6918754
16.000	1 6.4000000	2 1.2800000	3 6.1440000	2 8.1920000
16.250	1 6.6015625	2 1.3203125	3 6.5370940	2 8.7161254
16.500	1 6.8062500	2 1.3612500	3 6.9487558	2 9.2650078
16.750	1 7.0140625	2 1.4028125	3 7.3795609	2 9.8394146
17.000	1 7.2250000	2 1.4450000	3 7.8300937	3 1.0440125
17.250	1 7.4390625	2 1.4878125	3 8.3009476	3 1.1067930
17.500	1 7.6562500	2 1.5312500	3 8.7927246	3 1.1723633
17.750	1 7.8765625	2 1.5753125	3 9.3060355	3 1.2408047
18.000	1 8.1000000	2 1.6200000	3 9.8415000	3 1.3122000
18.250	1 8.3265625	2 1.6653125	4 1.0399746	3 1.3866329
18.500	1 8.5562500	2 1.7112500	4 1.0981412	3 1.4641883
18.750	1 8.7890625	2 1.7578125	4 1.1587143	3 1.5449524
19.000	1 9.0250000	2 1.8050000	4 1.2217594	3 1.6290125
19.250	1 9.2640625	2 1.8528125	4 1.2873428	3 1.7164571
19.500	1 9.5062500	2 1.9012500	4 1.3555318	3 1.8073758
19.750	1 9.7515625	2 1.9503125	4 1.4263946	3 1.9018594
20.000	2 1.0000000	2 2.0000000	4 1.5000000	3 2.0000000
20.250	2 1.0251563	2 2.0503126	4 1.5764181	3 2.1018908
20.500	2 1.0506250	2 2.1012500	4 1.6557192	3 2.2076256
20.750	2 1.0764063	2 2.1528126	4 1.7379757	3 2.3173010
21.000	2 1.1025000	2 2.2050000	4 1.8232593	3 2.4310124

Table 9B (continued)

x	$P_1 = x^2/4$	P_2	P_3	P_4
21.250	2	2.2578126	4	2.5488588
21.500	2	2.3112500	4	2.6709382
21.750	2	2.3653126	4	2.7973518
22.000	2	2.4200000	4	2.9282000
22.250	2	2.4753126	4	3.0635862
22.500	2	2.5312500	4	3.2036132
22.750	2	2.5878126	4	3.3483870
23.000	2	2.6450000	4	3.4980124
23.250	2	2.7028126	4	3.6525978
23.500	2	2.7612500	4	3.8122506
23.750	2	2.8203126	4	3.9770814
24.000	2	2.8800000	4	4.1472000
24.250	2	2.9403126	4	4.3227190
24.500	2	3.0012500	4	4.5037506
24.750	2	3.0628126	4	4.6904104
25.000	2	3.1250000	4	4.8828124
25.250	2	3.1878126	4	5.0810744
25.500	2	3.2512500	4	5.2853132
25.750	2	3.3153126	4	5.4956488
26.000	2	3.3800000	4	5.7122000
26.250	2	3.4453126	4	5.9350894
26.500	2	3.5112500	4	6.1644382
26.750	2	3.5778126	4	6.4003714
27.000	2	3.6450000	4	6.6430124
27.250	2	3.7128126	4	6.8924886
27.500	2	3.7812500	4	7.1489256
27.750	2	3.8503126	4	7.4124534
28.000	2	3.9200000	4	7.6832000
28.250	2	3.9903126	4	7.9612972
28.500	2	4.0612500	4	8.2468756
28.750	2	4.1328126	4	8.5400698
29.000	2	4.2050000	4	8.8410124
29.250	2	4.2778126	4	9.1498402
29.500	2	4.3512500	4	9.4666882
29.750	2	4.4253126	4	9.7916958
30.000	2	4.5000000	4	1.0125000
30.250	2	4.5753126	4	1.0466743
30.500	2	4.6512500	4	1.0817063
30.750	2	4.7278126	4	1.1176106
31.000	2	4.8050000	4	1.1544012
31.250	2	4.8828126	4	1.1920929
31.500	2	4.9612500	4	1.2307001
31.750	2	5.0403126	4	1.2702375
32.000	2	5.1200000	4	1.3107200
32.250	2	5.2003126	5	1.3521625

Table 9B (continued)

x	$P_1 = x^2/4$	P_2	P_3	P_4
32.500	2 2.6406250	2 5.2812500	5 1.0459350	4 1.3945801
32.750	2 2.6814063	2 5.3628126	5 1.0784910	4 1.4379879
33.000	2 2.7225000	2 5.4450000	5 1.1118009	4 1.4824012
33.250	2 2.7639063	2 5.5278126	5 1.1458767	4 1.5278356
33.500	2 2.8056250	2 5.6112500	5 1.1807297	4 1.5743063
33.750	2 2.8476563	2 5.6953126	5 1.2163720	4 1.6218293
34.000	2 2.8900000	2 5.7800000	5 1.2528150	4 1.6704200
34.250	2 2.9326563	2 5.8653126	5 1.2900709	4 1.7200946
34.500	2 2.9756250	2 5.9512500	5 1.3281516	4 1.7708688
34.750	2 3.0189063	2 6.0378126	5 1.3670693	4 1.8227590
35.000	2 3.0625000	2 6.1250000	5 1.4068359	4 1.8757812
35.250	2 3.1064063	2 6.2128126	5 1.4474640	4 1.9299520
35.500	2 3.1506250	2 6.3012500	5 1.4889657	4 1.9852876
35.750	2 3.1951563	2 6.3903126	5 1.5313536	4 2.0418048
36.000	2 3.2400000	2 6.4800000	5 1.5746400	4 2.0995200
36.250	2 3.2851563	2 6.5703126	5 1.6188378	4 2.1584504
36.500	2 3.3306250	2 6.6612500	5 1.6639594	4 2.2186126
36.750	2 3.3764063	2 6.7528126	5 1.7100180	4 2.2800240
37.000	2 3.4225000	2 6.8450000	5 1.7570259	4 2.3427012
37.250	2 3.4689063	2 6.9378126	5 1.8049966	4 2.4066622
37.500	2 3.5156250	2 7.0312500	5 1.8539428	4 2.4719238
37.750	2 3.5626563	2 7.1253126	5 1.9038780	4 2.5385040
38.000	2 3.6100000	2 7.2200000	5 1.9548150	4 2.6064200
38.250	2 3.6576563	2 7.3153126	5 2.0067675	4 2.6756900
38.500	2 3.7056250	2 7.4112500	5 2.0597485	4 2.7463314
38.750	2 3.7539063	2 7.5078126	5 2.1137719	4 2.8183626
39.000	2 3.8025000	2 7.6050000	5 2.1688509	4 2.8918012
39.250	2 3.8514063	2 7.7028126	5 2.2249995	4 2.9666660
39.500	2 3.9006250	2 7.8012500	5 2.2822312	4 3.0429750
39.750	2 3.9501563	2 7.9003126	5 2.3405602	4 3.1207470
40.000	2 4.0000000	2 8.0000000	5 2.4000000	4 3.2000000

Part III

ILLUSTRATIVE PROBLEMS

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PROBLEM 1

A truncated conical shell with a uniform thickness of $\frac{1}{4}$ in. has radii of 7 and 12 in. at the openings. The axial distance between the two radii is 5 in. The cone is loaded with a Q_a force along the inner edge. Determine the circumferential membrane and bending stresses at the inner edge, in terms of Q_a , when the cone is held in equilibrium by a normal force, (1) along the outer edge, (2) along the inner edge.

Solution

(1) For this cone,

$$\alpha = \tan^{-1} \frac{12 - 7}{5} = 45 \text{ deg} ,$$

$$a \text{ (exact)} = \frac{7}{\sin \alpha} = 9.8994 \quad (\text{ref 1}),$$

$$b \text{ (exact)} = \frac{12}{\sin \alpha} = 16.970 ,$$

$$\beta^2 = 3.3045 \times 4 = 13.218 .$$

The second equation of the coordinate transformation equation (formula v) yields

$$\frac{x_a^2}{4} = \beta^2 a = 130.85 ,$$

$$\frac{x_b^2}{4} = \beta^2 b = 224.31 .$$

The value of $x^2/4$ (P_1 function) listed in Table 9 that is nearest to the value of 130.85 is 129.39062. Hence from the table take $x_a = 22.75$, and $x_b = 30.00$. Therefore the adjusted values of a and b are 9.7890 and 17.022, respectively. For this problem, by the first definition of k (formula iv), since $\rho = N_a = 0$, $k = 9.7890 Q_a$.

The boundary conditions are

1. $Q = Q_a$ at $x = x_a = 22.75$,
2. $M_y = 0$ at $x = x_a = 22.75$,
3. $Q = 0$ at $x = x_b = 30.00$,
4. $M_y = 0$ at $x = x_b = 30.00$.

¹Five significant figures in the initial calculations will usually yield results of sufficient accuracy for most practical purposes.

Then by formulas 1 and 3 and Tables 1 and 3 in set B, the following set of four simultaneous equations is obtained. For convenience it is written in the following matrix form:

$$Z \begin{bmatrix} C_1 \\ C_2 \\ C_3 \\ C_4 \end{bmatrix} = S Q_a ,$$

where Z is the following four-by-four matrix,

$$Z = \begin{bmatrix} -5.8798 \times 10^3 & 3.0722 \times 10^2 & -1.0474 \times 10^{-10} & 9.5809 \times 10^{-11} \\ 4.9461 \times 10^4 & 4.6970 \times 10^4 & -1.5845 \times 10^{-9} & -5.2095 \times 10^{-11} \\ -2.1907 \times 10^5 & -4.5399 \times 10^5 & 1.3876 \times 10^{-13} & 3.9194 \times 10^{-13} \\ -2.6606 \times 10^6 & 7.1914 \times 10^6 & -2.5922 \times 10^{-12} & 5.5770 \times 10^{-12} \end{bmatrix} ,$$

and S is the following four-by-one matrix,

$$S = \begin{bmatrix} 7.5654 \times 10^{-2} \\ 4.0929 \times 10^{-4} \\ 0 \\ 1.3535 \times 10^{-4} \end{bmatrix} .$$

The solution of this set of equations is

$$C_1 = 1.4445 \times 10^{-9} Q_a ,$$

$$C_3 = -2.5270 \times 10^7 Q_a ,$$

$$C_2 = -4.687 \times 10^{-11} Q_a ,$$

$$C_4 = 7.6205 \times 10^8 Q_a .$$

Then, by formula 2, the circumferential membrane force at the inner edge ($x = 22.75$) is

$$N_\theta = -13.218 (-4.5206 \times 10^4 C_1 + 4.9369 \times 10^4 C_2 + 8.3515 \times 10^{-11} C_3 - 1.6132 \times 10^{-9} C_4) .$$

During the analysis a variety of values of characteristics (exponents of ten) is usually encountered. It may be helpful to suggest, for the beginner, a convenient means of writing such numbers when carrying out the actual calculations on a desk calculator. It is convenient to keep the decimal point always immediately after the first digit, and then place (in smaller size) the value of the characteristic (with sign) above the last digit of the number, and the sign of the number (if negative) above the first digit of the number. For example, when evaluating the

above expression it is convenient to write the following:

$$-4.5206 \times 10^4 C_1 = (\bar{4}.5206^4) (\bar{1}.4445^9) = \bar{6}.5300^5$$

$$4.9369 \times 10^4 C_2 = (4.9369^4) (\bar{4}.687^{11}) = \bar{2}.314^6$$

$$8.3515 \times 10^{-11} C_3 = (8.3515^{11}) (\bar{2}.5270^7) = \bar{2}.1104^3$$

$$-1.6132 \times 10^{-9} C_4 = (\bar{1}.6132^9) (7.6205^8) = \bar{1}.2294^0$$

$$\text{Sum} = \bar{1}.2315^0$$

Then

$$N_\theta = (\bar{1}.3218^1) (\bar{1}.2315^0) Q_a = 1.6278^1 Q_a = 16.278 Q_a .$$

In carrying out the above multiplications, the reader should make special note of when and when not to add 1 to the sum of the characteristics (exponents) in obtaining the characteristic of the product. Usually, a little practice with this method leads to considerable efficiency in performing what at first seems to be a tedious mathematical operation.

Similarly, by formula 4,

$$M_\theta = 1.5118 \times 10^4 C_1 + 1.9441 \times 10^4 C_2 - 3.8815 \times 10^{-10} C_3 + \\ + 7.9680 \times 10^{-11} C_4 + 4.1811 \times 10^{-5} k = 0.070959 Q_a .$$

Then by formulas 8a and 9a,

$$\sigma_{m\theta} = \frac{16.278 Q_a}{b} = 65.112 Q_a \quad (\text{tensile stress}) ,$$

$$\sigma_{B\theta} = \frac{(0.070959) 6 Q_a}{b^2} = 6.8121 Q_a \quad (\text{tensile stress at outside surface}) .$$

(2) If the cone is held in equilibrium by a normal force along the inner edge, $N_a \cot \alpha = -Q_a$; hence k becomes zero, and only the S matrix is changed in the matrix equation of the previous problem.

The S matrix becomes

$$S = \begin{bmatrix} 7.5654 \times 10^{-2} \\ 0 \\ 0 \\ 0 \end{bmatrix},$$

and the solution of the four simultaneous equations is then

$$C_1 = 1.4671 \times 10^{-9} Q_a,$$

$$C_3 = -2.5020 \times 10^7 Q_a,$$

$$C_2 = -5.746 \times 10^{-11} Q_a,$$

$$C_4 = 7.6232 \times 10^8 Q_a;$$

and this, in turn, yields

$$\sigma_{m\theta} = 65.140 Q_a \quad \text{and} \quad \sigma_{B\theta} = 6.7636 Q_a.$$

PROBLEM 2

A complete conical shell with a uniform thickness of 0.1 in. has an internal vertex angle of 150 deg. The edge at a distance of 5.5340 in. from the vertex (measured along the surface of the cone) is securely fastened to a rigid plate. Determine the internal normal membrane force and the internal bending moment at the secured (assumed fixed) edge, in the meridional direction, when the cone is subjected to an internal pressure of p pounds per square inch.

Solution

Since $\alpha = 75$ deg and $b = 0.1$ in., formula ii yields $\gamma = 8.8544$, which, in turn, by the second equation of formula v, yields $x^2/4 = 49.000$, and hence $x_b = 14.00$.

Since the constants of integrations C_3 and C_4 must be taken equal to zero when a complete cone is analyzed, the necessary and sufficient boundary conditions for this problem are

$$\left. \begin{array}{l} 1. \frac{dw}{dy} = 0 \\ 2. w = 0 \\ 3. v = 0 \end{array} \right\} \text{ at } x = x_b = 14.00$$

Then, since $N_b \cot \alpha + Q_b$ must equal $bp/2$ to maintain equilibrium, $k = 0$, and by using the values in the tables in set A, the following set of simultaneous equations is obtained:

$$348.95C_1 + 1900.4C_2 = 147.00p,$$

$$-7081.4C_1 + 11152.0C_2 + C_5 = 3601.5p,$$

$$-339.25C_1 + 292.70C_2 + C_5 = -480.20p.$$

The solution is

$$C_1 = -0.37107p, \quad C_2 = 0.14549p, \quad C_5 = -648.66p.$$

Then by formula 1a,

$$N_y = 33.045 [-(-38.784C_1 + 7.1215C_2) + 49.000p] = 1109.4p = 7.0752p,$$

and, by formula 3,

$$M_y = 225.88C_1 + 160.86C_2 - 3.9000p = -60.414p = -0.38529p,$$

where the negative sign denotes compressive stresses at the outside surface.

Although the solution to this problem employed values from set A ($x < 16$), it should be noted that another solution can be obtained by using the values from the tables in set B. This will yield for formulas 1a and 3, respectively,

$$N_y = 7.2723p,$$

$$M_y = -0.34379p.$$

It is shown in part IV that the internal stresses in the circumferential direction at a fixed edge are equal to Poisson's ratio (taken = 0.3) times the stresses in the meridional direction.

THE FUNNEL PROBLEM

Cones have a very wide application as reducers in connecting two cylinders of different diameters, or as "heads" on cylindrical pressure vessels. A funnel shape results if the cylinder is attached at the small opening of the cone, but that is only one aspect of the problem. The funnel problem, then, is that of determining the stresses (and displacements) in a conical shell which is fastened (at either end) to a cylindrical shell and subjected to an axial load on the cylinder and/or an internal pressure in the cone and cylinder.

Initially, the problem is one of determining the five constants of integration in terms of the axial load on the cylinder and/or the internal pressure in the cone and cylinder. The necessary equations are listed under case I, for the cylinder attached to the small opening of the cone, and under case II, for the cylinder attached to the large opening.

The modified definition of k (Eq. 1 below) is obtained from the condition that the sum of the axial components of the internal forces at the junction of the cylinder and cone must equal the axial force on the cylinder. Equation 2 is obtained by equating the radial displacements of the cylinder and cone at the junction. In this equation the radial displacement of the cylinder due to the axial force on the cylinder (Poisson's effect) is neglected. To take it into account, the terms $(0.075/\Delta r^2) (F/\pi + r_o^2 p)$ must be included in the brackets in Eq. 2 in each case. Equation 3 stems from the assumption that the initial angle between cylinder and cone at the junction is maintained; that is, the slope of the displacement normal to the surface of the cylinder is equal to the corresponding slope of the cone. In these equations it is assumed that the cylinder is of sufficient length that the influence of loads (other than axial loads) along the outer edge of the cylinder is negligible at the junction. This usually requires that $\Delta L > 6$, where L is the length of the cylinder, and Δ is defined below.

Symbols for the Cylinder

F = axial load on cylinder, tension positive,

t = thickness of cylinder,

r = radius of middle surface of cylinder,

$\Delta^4 = \frac{2.73}{r^2 t^2} \left(\Delta^2 = \frac{1.6523}{rt} \right)$, a convenient geometrical parameter with Poisson's ratio taken equal to 0.3,

r_o = internal radius of cylinder,

E_c = Young's modulus of elasticity of the cylinder.

All other symbols are those established for the cone in part I.

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Case I – Cylinder Attached to Small Opening of Cone ($x = x_a$)

$$(1) \quad k = \frac{1}{\sin^2 \alpha} \left(\frac{F}{2\pi} - r^2 \beta^4 \rho + r_o^2 \beta^4 \rho \right) \quad (\text{ref 2}) ,$$

$$(2) \quad w_a \cos \alpha - v_a \sin \alpha = \frac{2\Delta r^2}{E_c t} \left(\Delta M_a + Q_a \cos \alpha - N_a \sin \alpha - \frac{\beta^4}{\Delta} \rho \right) ,$$

$$(3) \quad \left(\frac{dw}{dy} \right)_a = \frac{2\Delta^2 r^2}{E_c t} \left(2\Delta M_a + Q_a \cos \alpha - N_a \sin \alpha \right) .$$

Case II – Cylinder Attached to Large Opening of Cone ($x = x_b$)

$$(1) \quad k = \frac{1}{\sin^2 \alpha} \left(\frac{F}{2\pi} - r^2 \beta^4 \rho + r_o^2 \beta^4 \rho \right) \quad (\text{ref 2}) ,$$

$$(2) \quad w_b \cos \alpha - v_b \sin \alpha = \frac{2\Delta r^2}{E_c t} \left(\Delta M_b - Q_b \cos \alpha + N_b \sin \alpha - \frac{\beta^4}{\Delta} \rho \right) ,$$

$$(3) \quad \left(\frac{dw}{dy} \right)_b = \frac{2\Delta^2 r^2}{E_c t} \left(-2\Delta M_b + Q_b \cos \alpha - N_b \sin \alpha \right) .$$

Illustrative Problem

A cylinder of radius 2.0069 in. is fastened to a cone whose vertex angle is 90 deg. The cylinder and the cone are made of the same material ($E = E_c$) and each has a uniform thickness of $\frac{1}{4}$ in. The edge at the large opening of the cone has a radius of 11.247 in. and is fastened to a rigid plate. Determine the stresses in the conical shell at the junction when the vessel is subjected to an internal pressure p . Assume that the end of the cylinder away from the cone is capped.

Solution

For this problem,

$$\begin{aligned} \alpha &= 45 \text{ deg} , & a &= \frac{2.0069}{\sin \alpha} = 2.8382 , & b &= \frac{11.247}{\sin \alpha} = 15.906 , \\ \gamma &= \beta^2 = 13.218 , & x_a &= 12.25 , & x_b &= 29.00 , \\ \Delta &= 1.8147 , & r &= 2.0069 , & r_o &= 1.8819 . \end{aligned}$$

²The $r_o^2 \beta^4 \rho$ term in the expression for k appears only when there is an axial load on the cylinder due to the internal pressure, as if the cylinder were capped. If the cylinder is supported externally in such a manner that there is no axial load due to the internal pressure, then this term must be omitted.

Since the cylinder is capped, the $r_o^2 \beta^4 \rho$ term must be included in the definition of k (Eq. 1).
Hence, since $F = 0$,

$$k = \frac{\beta^4 \rho}{\sin^2 \alpha} (r_o^2 - r^2) = 2(13.218)^2 \rho [(1.8819)^2 - (2.0069)^2] = -169.86\rho .$$

The boundary conditions are

1. Eq. 2, case I
 2. Eq. 3, case I
- at $x = 12.25$,
3. $\frac{dw}{dy} = 0$
 4. $w = 0$
 5. $v = 0$
- at $x = 29.00$.

Before expressing conditions 1 and 2 (Eqs. 2 and 3 of case I) in terms of the constants of integration, it is convenient to first substitute

$$\tan \alpha \left(\frac{k}{a} + a\beta^4 \rho - Q_a \right)$$

for N_a , obtained from the first definition of k , formula iv (for case II, use the second definition of k). Then the expression $Q_a \cos \alpha - N_a \sin \alpha$, appearing in Eqs. 2 and 3 of case I, becomes

$$\left(\frac{1}{\cos \alpha} \right) \left[Q_a - \sin^2 \alpha \left(\frac{k}{a} + a\beta^4 \rho \right) \right] ,$$

or, for this problem,

$$Q_a \cos \alpha - N_a \sin \alpha = 1.4142Q_a - 308.33\rho .$$

The five terms, M_a , Q_a , w_a , v_a , and $(dw/dy)_a$, appearing in Eqs. 2 and 3 are now expressed in terms of the constants of integration and ρ , with the aid of the conical-shell formulas and the values in the tables of set B at $x = 12.25$. This yields³ the following:

	C_1	C_2	C_3	C_4	C_5	ρ
$M_a = \bar{2.9519}^1$	9.4587^1	$\bar{3.3949}^{-6}$	6.1100^{-6}	0	$\bar{3.8160}^0$	
$Q_a = \bar{1.0736}^2$	$\bar{1.7704}^2$	4.1103^{-6}	1.5033^{-5}	0	0	
$EW_a = \bar{1.3984}^4$	$\bar{3.4257}^3$	$\bar{9.4128}^{-4}$	$\bar{5.3708}^{-4}$	4	$\bar{1.0907}^4$	
$Ev_a = \bar{5.2124}^2$	$\bar{2.0187}^2$	3.6040^{-6}	7.4768^{-5}	4	$\bar{1.1330}^3$	
$E(dw/dy)_a = \bar{2.6566}^4$	1.6112^4	2.2559^{-3}	6.1680^{-4}	0	$\bar{6.1902}^3$	

³See illustrative problem 1 for interpretation of the numerical values.

Similarly, at $x = 29.00$, the following is obtained:

	C_1	C_2	C_3	C_4	C_5	ρ
$Ew_b =$	4 $\bar{4.1603}^8$	$\bar{7.1059}^8$	$\bar{2.7081}^{-9}$	$\bar{7.2184}^{-10}$	1	$\bar{6.7215}^4$
$Ev_b =$	4 $(6.5935)^5$	$\bar{1.4589}^7$	$\bar{5.4016}^{-11}$	$\bar{4.1162}^{-11}$	1	$\bar{7.9835}^3$
$E(dw/dy)_b =$	52.872 $\bar{5.4941}^7$	$\bar{1.4365}^7$	$\bar{9.6863}^{-11}$	$\bar{1.6726}^{-10}$	0	$\bar{6.3156}^2$

Substitution of the first four of the above equations into Eq. 2, case I (condition 1), eliminates C_5 , since $\cos \alpha \tan^2 \alpha = \sin \alpha \tan \alpha$.

Subtracting condition 5 from condition 4 (i.e., $w_b - v_b$) reduces the initial set of five simultaneous equations to the following set of four simultaneous equations:

	C_1	C_2	C_3	C_4	ρ
Condition 1	$\bar{2.490}^3$	$\bar{2.323}^3$	$\bar{6.4779}^{-4}$	$\bar{2.3241}^{-3}$	$= 1.7152^4$
Condition 2	$\bar{9.12}^2$	$\bar{6.251}^3$	$\bar{2.9565}^{-3}$	$\bar{5.2256}^{-3}$	$= 2.7995^4$
Condition 3	$\bar{5.4941}^7$	$\bar{1.4365}^7$	$\bar{9.6863}^{-11}$	$\bar{1.6726}^{-10}$	$= 6.3156^2$
Condition 4 - - condition 5	$\bar{4.1669}^8$	$\bar{6.9600}^8$	$\bar{2.7621}^{-9}$	$\bar{6.8068}^{-10}$	$= 7.5199^4$

This set of equations may be solved very readily by omitting the numbers enclosed by dotted lines and solving the remaining two sets of two simultaneous equations.⁴ This yields

$$C_1 = 1.9863\rho, \quad C_2 = 1.1993\rho, \quad C_3 = 3.0278\rho, \quad C_4 = 6.5361\rho.$$

Then, substituting these values for the constants of integration in formulas 1a, 2, 3, and 4, at $x = 12.25$, yields, respectively,

$$N_y = 325.32\rho = 0.03097p,$$

$$N_\theta = 1562.8\rho = 4.4723p,$$

$$M_y = 25.726\rho = 0.07362p,$$

$$M_\theta = 6.192\rho = 0.01772p;$$

and, by formulas 8, 8a, 9, and 9a, the membrane and the bending stresses at the outside surface of the junction are

$$\sigma_{my} = 3.7239p, \quad \sigma_{m\theta} = 17.889p,$$

$$\sigma_{By} = 7.0675p, \quad \sigma_{B\theta} = 1.7011p.$$

⁴This reduction indicates that the constants C_1 and C_2 for x values near x_a , and the constants C_3 and C_4 for x values near x_b , have a negligible influence upon the results.

THE FLOWER POT PROBLEM

A container is in the shape of a flower pot when the small opening of a conical shell is closed with a uniform flat plate. The flower pot problem is defined as that of determining the stresses and/or displacements of a conical shell which is closed at either end with a flat plate while being subjected to an axial force F , applied at the center of the plate, and/or a uniform internal pressure p .

Initially, the problem is one of determining the five constants of integration of the cone in terms of the axial force F and/or the uniform internal pressure p . The appropriate equations are listed under case I, for the plate at the small end of the cone, and under case II, for the plate at the large end of the cone.

The modified definition of k (Eq. 1 below) is obtained from the condition that the sum of the axial components of the internal forces at the junction of the plate and cone must equal the sum of the axial forces on the plate. Equation 2 is obtained by equating the radial displacements of the plate and the cone at the junction. Equation 3 stems from the assumption that the initial angle between plate and cone at the junction is maintained, that is, that the slope of the displacement normal to the surface of the plate is equal to the corresponding slope of the cone.

In addition to the symbols already established for the conical shell, the following are established for the flat circular plate.

Symbols for the Plate

F = axial tensile force on cone applied at the center of the plate

$T = F/2\pi$, convenient load parameter due to force F

E_p = Young's modulus of elasticity of the plate

t = uniform thickness of plate

R = radius of plate

= $a \sin \alpha$ for case I

= $b \sin \alpha$ for case II

Case I - Plate at Small Opening of Cone

$$(1) \quad k = \frac{T}{\sin^2 \alpha} \quad (\text{ref 5}) ,$$

$$(2) \quad w_a \cos \alpha - v_a \sin \alpha = \frac{0.7 \tan \alpha}{E_p t} (aQ_a - T - R^2 \beta^4 p) ,$$

$$(3) \quad \left(\frac{dw}{dy} \right)_a = \frac{2.1R}{E_p t^3} (4M_a + 2T + R^2 \beta^4 p) .$$

⁵It is assumed that the uniform pressure p acting on the plate produces an axial force of magnitude $\pi R^2 p$ on the conical shell.

Case II – Plate at Large Opening of Cone

$$(1) \quad k = \frac{T}{\sin^2 \alpha} \quad (\text{ref 5}),$$

$$(2) \quad w_b \cos \alpha - v_b \sin \alpha = \frac{-0.7 \tan \alpha}{E_p t} (bQ_b - T - R^2 \beta^4 \rho),$$

$$(3) \quad \left(\frac{dw}{dy} \right)_a = \frac{-2.1R}{E_p t^3} (4M_b + 2T + R^2 \beta^4 \rho).$$

Illustrative Problem

A conical shell with thickness $b = \frac{7}{32}$ in. and $\alpha = 30$ deg is closed at the small opening with a flat circular plate of thickness 0.512 in. and a radius R of 4.2990 in. (a of cone = 8.5981 in.). The cone and the plate are made of the same material ($E = E_p$). The edge at the large opening of the cone, $b = 14.906$ in., is securely fastened to a rigid support. Determine the stresses in the cone at the plate-cone junction when the conical shell is subjected to an axial force F applied at the center of the plate and to an internal pressure p .

Solution

The procedure for the solution of the flower pot problem is very similar to that for the funnel problem. Hence many of the steps of the illustrative funnel problem will not be repeated. The boundary conditions are

$$\left. \begin{array}{l} 1. \text{ Eq. 2, case I of the flower pot problem} \\ 2. \text{ Eq. 3, case I of the flower pot problem} \\ 3. \left(\frac{dw}{dy} \right)_b = 0 \\ 4. w_b = 0 \\ 5. v_b = 0 \end{array} \right\} \quad \begin{array}{l} \text{at } x = x_a = 30.00, \\ \\ \\ \text{at } x = x_b = 39.50. \end{array}$$

Formulas 1, 3, 5, 6, and 7 of the conical-shell formulas and the values in the corresponding tables of set B, at $x = 30.00$, yield the following:

	C_1	C_2	C_3	C_4	ρ	T
$Q_a =$	$\bar{5.7322}^6$	$\bar{1.1879}^7$	3.6308^{-12}	1.0255^{-11}	0	0
$M_a =$	$\bar{2.6606}^6$	7.1914^6	2.5922^{-12}	5.5770^{-12}	3.9000^0	$\bar{5.5308}^{-5}$
$E(dw/dy)_a =$	$\bar{4.0729}^9$	1.9653^9	3.5162^{-9}	1.2448^{-9}	$\bar{2.6914}^4$	7.0884^{-1}
$E(w_a \cos \alpha - v_a \sin \alpha) =$	$\bar{2.0964}^9$	7.0913^8	1.6807^{-9}	8.3954^{-10}	$\bar{1.1357}^5$	1.584^0

Similarly, at $x = 39.50$, the following is obtained:

	C_1	C_2	C_3	C_4	ρ	T
$(dw/dy)_b$ (ref 6) =	$\bar{5.3193}^{10}$	$\bar{6.3255}^{10}$	$\bar{9.7163}^{-14}$	$\bar{8.1452}^{-15}$	$\bar{1.1702}^3$	$\bar{1.0255}^{-2}$
$(w_b - v_b)$ (ref 6) =	$\bar{1.6074}^{12}$	$\bar{1.5216}^{11}$	$\bar{1.2372}^{-12}$	$\bar{1.5030}^{-12}$	$\bar{2.5865}^5$	$\bar{1.200}^0$

The initial set of four simultaneous equations for this problem is as follows:

	C_1	C_2	C_3	C_4	ρ	T
Condition 1	$\bar{2.0575}^9$	$\bar{6.2851}^8$	$\bar{1.7053}^{-9}$	$\bar{9.0914}^{-10}$	$\bar{1.0358}^5$	$\bar{2.3728}^0$
Condition 2	$\bar{3.3571}^9$	$\bar{3.05}^7$	$\bar{4.2136}^{-9}$	$\bar{2.7453}^{-9}$	$\bar{8.7670}^5$	$\bar{1.3380}^2$
Condition 3	$\bar{5.3193}^{10}$	$\bar{6.3255}^{10}$	$\bar{9.7163}^{-14}$	$\bar{8.1452}^{-15}$	$\bar{1.1702}^3$	$\bar{1.0255}^{-2}$
Condition 4 - - condition 5	$\bar{1.6074}^{12}$	$\bar{1.5216}^{11}$	$\bar{1.2372}^{-12}$	$\bar{1.5030}^{-12}$	$\bar{2.5865}^5$	$\bar{1.200}^0$

This set of equations may be readily solved by reducing it first to two sets of two simultaneous equations, as in the illustrative funnel problem:

	ρ	T
$C_1 =$	$\bar{1.7293}^{-7}$	$\bar{7.944}^{-13}$
$C_2 =$	$\bar{1.2693}^{-7}$	$\bar{5.06}^{-13}$
$C_3 =$	$\bar{6.0233}^{13}$	$\bar{1.3525}^{10}$
$C_4 =$	$\bar{2.2690}^{14}$	$\bar{2.7979}^{10}$

Then substituting these values back into formulas 1a, 2, 3, and 4 at $x = 30.00$ yields the following:

	ρ	T
$N_y =$	$\bar{4.6162}^3$	$\bar{4.0588}^{-1}$
$N_\theta =$	$\bar{2.5981}^3$	$\bar{2.73}^{-3}$
$M_y =$	$\bar{1.4260}^3$	$\bar{1.9111}^{-1}$
$M_\theta =$	$\bar{3.8008}^2$	$\bar{4.8917}^{-2}$

⁶The constant coefficients, $\gamma \tan^2 a/Eh$, $\tan^2 a/Eh$, and $\tan a/Eh$ need not be included in these equations since they are set equal to zero, at $x = 39.50$. Subtract v_b from w_b to eliminate C_5 .

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These values, in turn, will yield the following stresses in the cone at the plate-cone junction:

$$\sigma_{my} = 15.411p + 0.29529F ,$$

$$\sigma_{m\theta} = 8.6738p + 0.00199F ,$$

$$\sigma_{By} = -130.58p - 3.8137F ,$$

$$\sigma_{B\theta} = -34.804p - 0.97617F ,$$

where the negative signs in the expressions for the bending stresses denote compressive stresses at the outside surface.

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Part IV

DERIVATION OF THE CONICAL-SHELL FORMULAS

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Fig. 2. (a) Free-Body Diagrams of Finite Portions of Conical Shell; (b) Free-Body Diagram of Differential Element.

DERIVATION OF THE BASIC DIFFERENTIAL EQUATION

The general symbol and sign convention established in part I will be used in part IV. Additional symbols will be designated as required.

The basic differential equation is derived from the following sets of equations.¹

Equations of Equilibrium

$$(1) \quad N_y = -\frac{U \tan \alpha}{y} + \frac{k \tan \alpha}{y} + \frac{py \tan \alpha}{2},$$

$$(2) \quad N_\theta = -\frac{dU}{dy} \tan \alpha + py \tan \alpha,$$

$$(3) \quad U = M_\theta - \frac{d(yM_y)}{dy},$$

where

$$U = Qy,$$

$$k = a \left(N_a \cot \alpha + Q_a - \frac{pa}{2} \right) \\ \equiv b \left(N_b \cot \alpha + Q_b - \frac{pb}{2} \right),$$

as defined in part I.

Equation 1 is derived by summing the axial components of forces on a free-body diagram (see Fig. 2) of a finite portion of the cone for any arbitrary coordinate, $y(a \leq y \leq b)$. Equation 2 is derived by summing the components of forces normal to the surface of a free-body diagram of a differential element of the cone. Similarly, Eq. 3 is derived by summing moments about a tangent to a meridional edge of the differential element.

Displacement-Force Equations

$$(4) \quad \frac{dv}{dy} = \frac{1}{Eb} (N_y - \mu N_\theta),$$

$$(5) \quad v - w \cot \alpha = \frac{y}{Eb} (N_\theta - \mu N_y),$$

$$(6) \quad M_y = D \left(\frac{dV}{dy} + \mu \frac{V}{y} \right),$$

$$(7) \quad M_\theta = D \left(\frac{V}{y} + \mu \frac{dV}{dy} \right),$$

where $D = Eb^3/12(1 - \mu^2)$, the flexural rigidity of the shell, $\mu = \text{Poisson's ratio}$, and $V = dw/dy$.

It is well to point out here that for a fixed edge, $v = w = dw/dy = 0$, and hence Eq. 5, and Eqs. 6 and 7, will yield $N_\theta = \mu N_y$ and $M_\theta = \mu M_y$, respectively. This substantiates the statement

¹A more detailed derivation of these sets of equations for shells having a surface of revolution is given by S. Timoshenko, *Theory of Plates and Shells*, chap. XII, McGraw-Hill, New York, 1940. The positive directions for M_y and M_θ are changed herein.

made at the end of illustrative problem 2 of part III: that at a fixed edge the internal stresses in the circumferential direction are equal to Poisson's ratio times the stresses in the meridional direction:

The basic fourth-order differential equation is derived from two second-order differential equations, and the latter will now be derived. Differentiating Eq. 5 with respect to y and subtracting from Eq. 4 to eliminate v yields

$$(8) \quad Eb \frac{dw}{dy} \cot \alpha = y \frac{d(\mu N_y - N_\theta)}{dy} + (1 + \mu)(N_y - N_\theta) .$$

Substituting Eqs. 1 and 2 for N_y and N_θ , respectively, yields

$$(9) \quad \frac{dw}{dy} = V = \frac{\tan^2 \alpha}{Eb} \left(y \frac{d^2 U}{dy^2} + \frac{dU}{dy} - \frac{U}{y} + \frac{k}{y} - \frac{3py}{2} \right) .$$

By introducing an operator, L ,

$$(10) \quad L(\dots) = y \frac{d^2(\dots)}{dy^2} + \frac{d(\dots)}{dy} - \frac{(\dots)}{y} ,$$

Eq. 9 may be written in the following simplified form:

$$(11) \quad V = \frac{\tan^2 \alpha}{Eb} \left[L(U) + \frac{k}{y} - \frac{3py}{2} \right] .$$

The other second-order differential equation is derived by substituting Eqs. 5 and 7 for M_y and M_θ , respectively, into Eq. 3. This yields

$$(12) \quad U = D \left(-y \frac{d^2 V}{dy^2} - \frac{dV}{dy} + \frac{V}{y} \right) ,$$

or, by Eq. 10,

$$(13) \quad -U = DL(V) .$$

It may be readily verified, by performing the designated operations of the operator L on $1/y$ and y , that

$$(14) \quad L\left(\frac{1}{y}\right) = L(y) = 0 ,$$

and hence, by Eq. 11,

$$(15) \quad L(V) = \frac{\tan^2 \alpha}{Eb} LL(U) .$$

Thus Eqs. 11 and 13 combine to yield the following basic fourth-order differential equation in the fundamental analysis of conical shells:

$$(16) \quad LL(U) + \beta^4 U = 0 ,$$

where

$$\beta^4 = \frac{Eb}{D \tan^2 \alpha} = \frac{12(1 - \mu^2) \cot^2 \alpha}{b^2} .$$

EXACT SOLUTION OF THE BASIC DIFFERENTIAL EQUATION

Equation 16 may be written in either of the following forms:

$$(16a) \quad L[L(U) - i\beta^2 U] + i\beta^2[L(U) - i\beta^2 U] = 0 ,$$

$$(16b) \quad L[L(U) + i\beta^2 U] - i\beta^2[L(U) + i\beta^2 U] = 0 ,$$

where

$$i = \sqrt{-1} .$$

The solutions to the two second-order differential equations,

$$(17) \quad L(U) - i\beta^2 U = 0$$

and

$$(17a) \quad L(U) + i\beta^2 U = 0 ,$$

will satisfy Eq. 16. Furthermore, if

$$(18) \quad U_I = U_1 - iU_2 \quad \text{and} \quad U_{II} = U_4 + iU_3$$

are two linearly independent solutions of Eq. 17, then

$$U_{III} = U_1 + iU_2 \quad \text{and} \quad U_{IV} = U_4 - iU_3$$

are the two solutions of Eq. 17a. Hence Eq. 17 or 17a may be used to obtain the solution of Eq. 16, which will be in the form

$$(19) \quad U = C_1 U_1 + C_2 U_2 + C_3 U_3 + C_4 U_4 ,$$

where the C 's are constants of integration.

The signs and the order of subscripts on the right side of Eqs. 18 are arbitrary. They have been chosen in the form shown so as to yield results which may be expressed in terms of the Schleicher functions, which will be introduced later.

Substitution for the operator L in Eq. 17 yields

$$(20) \quad y \frac{d^2 U}{dy^2} + \frac{dU}{dy} - \frac{U}{y} - i\beta^2 U = 0 .$$

Making the coordinate transformation²

$$y = \frac{iz^2}{4\beta^2}$$

transforms Eq. 20 to

$$(21) \quad \frac{d^2 U}{dz^2} + \frac{1}{z} \frac{dU}{dz} + \left(1 - \frac{4}{z^2}\right) U = 0 ,$$

which is Bessel's equation of the second order. The detailed derivation of the solution of Bessel's equation is given in numerous texts on advanced mathematics, and hence only a brief

²The coordinate z is introduced, momentarily, to remove the imaginary number i from Eq. 20. Coordinate x will be introduced later.

derivation will be given here. Substituting first the series

$$U_1 = \sum_j^{\infty} a_j z^{2(j+1)} \quad (\text{ref 3})$$

and then the series

$$U_{11} = c \left[U_1 \ln mz + \sum_j^{\infty} b_j z^{2(j-1)} \right]$$

into Eq. 21 and equating the coefficients of like powers of z to zero permits the coefficients a_j and b_j to be obtained in terms of a_0 .

It should be realized that any arbitrary nonzero constant value may be assigned to each of the coefficients a_0 , c , and m , and that the above series for U_1 and U_{11} will still form a complete solution of Eq. 21. The specific values (designated later) for each of these coefficients are selected so as to produce results in terms of the Schleicher functions, as mentioned previously.

Taking $a_0 = -\frac{1}{8}$ and $c = 2/\pi$ places the infinite series solution of Eq. 21 in the following form:

$$(22) \quad U_1 = \sum_j^{\infty} \frac{(-1)^{j+1} (\frac{1}{2}z)^{2(j+1)}}{j! (j+2)!},$$

$$(23) \quad U_{11} = \frac{2}{\pi} U_1 \ln mz + \frac{1}{\pi} \left\{ \left(\frac{2}{z} \right)^2 + 1 - \sum_j^{\infty} \frac{(-1)^{j+1} (\frac{1}{2}z)^{2(j+1)} [S(j) + S(j+2)]}{j! (j+2)!} \right\},$$

where $S(j) = 1 + \frac{1}{2} + \frac{1}{3} + \frac{1}{4} + \dots + \frac{1}{j}$.

Defining $U_1 = U_1 - iU_2$ (Eq. 18) and substituting $x/\sqrt{i}$ for z in Eq. 22 gives the following form, upon separating the real and the imaginary parts:

$$(24) \quad U_1 = \sum_j^{\infty} \frac{(-1)^{j+1} (\frac{1}{2}x)^{4(j+1)}}{(2j+1)! (2j+3)!},$$

$$(24a) \quad U_2 = \sum_j^{\infty} \frac{(-1)^{j+1} (\frac{1}{2}x)^{4j+2}}{2j! (2j+2)!}.$$

³The dummy index, j , in all series equations to follow takes on consecutive values 0, 1, 2, 3, ..., ∞ , unless designated otherwise.

Similarly for Eq. 23 (taking $m = \delta i/2$),

$$(24b) \quad U_3 = -\frac{2}{\pi} U_2 \ln \frac{\delta x}{2} + \frac{1}{2} U_1 + \frac{1}{\pi} \left\{ \left(\frac{2}{x} \right)^2 + \sum_j \frac{(-1)^{j+1} (\frac{1}{2}x)^{4j+2} [S(2j) + S(2j+2)]}{2j! (2j+2)!} \right\}$$

$$(24c) \quad U_4 = \frac{2}{\pi} U_1 \ln \frac{\delta x}{2} + \frac{1}{2} U_2 + \frac{1}{\pi} \left\{ 1 - \sum_j \frac{(-1)^{j+1} (\frac{1}{2}x)^{4(j+1)} [S(2j+1) + S(2j+3)]}{(2j+1)! (2j+3)!} \right\}$$

where $\ln \delta = \text{Euler's constant} = \lim_{j \rightarrow \infty} (1 + \frac{1}{2} + \frac{1}{3} + \dots + \frac{1}{j} - \ln j) = 0.5772156649$. The above four functions for U in terms of x could also have been obtained by first transforming Eq. 20 into an equation in terms of x by the transformation $y = x^2/4\beta^2$, and then solving the transformed equation directly.

Equations 24, then, are the four required solutions of the basic fourth-order differential equation for conical shells (Eq. 16). Unfortunately it is difficult to evaluate these series for large values of x , even with the present high-speed computing machines; however, the asymptotic expansion of each of these series gives good approximations. These will now be derived.

ASYMPTOTIC EXPANSION SOLUTION OF THE BASIC DIFFERENTIAL EQUATION

The asymptotic expansion solution of the basic differential equation may be obtained in the following manner. First, the dependent variable U of Eq. 21 is transformed to the dependent variable W , which is defined by

$$(25) \quad U = z^{-1/2} e^{\Delta i z} W ,$$

where e is the base of the natural logarithm, and Δ will later take on the values of $+1$ and -1 . This yields

$$(26) \quad \frac{d^2 W}{dz^2} + 2\Delta i \frac{dW}{dz} - \frac{15}{4z^2} W = 0 .$$

It can be shown that the following series is a solution of Eq. 26:

$$W = 1 + \sum_{j=1,2,3}^{\infty} a_j z^{-j} ,$$

where

$$a_j = \frac{\prod_{1,2,3}^j [(j-1)j - 15/4]}{j! (2\Delta i)^j} .$$

If z is to take on large values only, all terms in the series for j greater than 1 may be omitted. This yields

$$W = 1 + \frac{15\Delta i}{8z} .$$

By substituting $x/\sqrt{i}$ for z and writing $\sqrt{i} = (1+i)/\sqrt{2}$, W may be expressed in the form

$$(27) \quad W = 1 - \frac{15\Delta}{8\sqrt{2} x} + \frac{i15\Delta}{8\sqrt{2} x} .$$

Similarly, by writing

$$z^{-1/2} = \frac{\cos(\pi/8) + i \sin(\pi/8)}{\sqrt{x}} ,$$

$$e^{\Delta i z} = e^{\Delta x/\sqrt{2}} \left[\cos\left(\frac{\Delta x}{\sqrt{2}}\right) + i \sin\left(\frac{\Delta x}{\sqrt{2}}\right) \right] ,$$

Eq. 25 may be expressed as

$$\begin{aligned}
 U &= \frac{e^{\Delta x/\sqrt{2}}}{\sqrt{x}} \left(\cos \frac{\Delta x}{\sqrt{2}} + i \sin \frac{\Delta x}{\sqrt{2}} \right) \left(\cos \frac{\pi}{8} + i \sin \frac{\pi}{8} \right) W \\
 &= \frac{e^{\Delta x/\sqrt{2}}}{\sqrt{x}} \left[\cos \left(\frac{\Delta x}{\sqrt{2}} + \frac{\pi}{8} \right) + i \sin \left(\frac{\Delta x}{\sqrt{2}} + \frac{\pi}{8} \right) \right] W \\
 &= U_a + iU_b .
 \end{aligned}$$

By substituting Eq. 27 for W and using $\cos (\pi/4)$ and $\sin (\pi/4)$, interchangeably, for $1/\sqrt{2}$, the following expressions may be written:

$$\begin{aligned}
 U_a &= \frac{e^{\Delta x/\sqrt{2}}}{\sqrt{x}} \left[\cos \left(\frac{\Delta x}{\sqrt{2}} + \frac{\pi}{8} \right) - \frac{15\Delta}{8x} \cos \left(\frac{\Delta x}{\sqrt{2}} - \frac{\pi}{8} \right) \right] , \\
 U_b &= \frac{e^{\Delta x/\sqrt{2}}}{\sqrt{x}} \left[\sin \left(\frac{\Delta x}{\sqrt{2}} + \frac{\pi}{8} \right) - \frac{15\Delta}{8x} \sin \left(\frac{\Delta x}{\sqrt{2}} - \frac{\pi}{8} \right) \right] .
 \end{aligned}$$

Since U_a and U_b are solutions of Eq. 20 (transformed over to x), their sum and their difference are also solutions. Hence, with $\Delta = +1$, the following definitions may be written:

$$(28) \quad U_1 = \frac{1}{2\sqrt{\pi}} (U_a + U_b) = \frac{e^{x/\sqrt{2}}}{\sqrt{2\pi x}} \left[\cos \left(\frac{x}{\sqrt{2}} - \frac{\pi}{8} \right) - \frac{15}{8x} \sin \left(\frac{x}{\sqrt{2}} + \frac{\pi}{8} \right) \right] ,$$

$$(28a) \quad U_2 = \frac{1}{2\sqrt{\pi}} (U_a - U_b) = -\frac{e^{x/\sqrt{2}}}{\sqrt{2\pi x}} \left[\sin \left(\frac{x}{\sqrt{2}} - \frac{\pi}{8} \right) + \frac{15}{8x} \cos \left(\frac{x}{\sqrt{2}} + \frac{\pi}{8} \right) \right] ,$$

and, with $\Delta = -1$,

$$(28b) \quad U_3 = \sqrt{\frac{1}{\pi}} (U_a - U_b) = \sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \left[\sin \left(\frac{x}{\sqrt{2}} + \frac{\pi}{8} \right) + \frac{15}{8x} \cos \left(\frac{x}{\sqrt{2}} - \frac{\pi}{8} \right) \right] ,$$

$$(28c) \quad U_4 = \sqrt{\frac{1}{\pi}} (U_a + U_b) = \sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \left[\cos \left(\frac{x}{\sqrt{2}} + \frac{\pi}{8} \right) - \frac{15}{8x} \sin \left(\frac{x}{\sqrt{2}} - \frac{\pi}{8} \right) \right] .$$

The $1/(2\sqrt{\pi})$ and $\sqrt{1/\pi}$ factors were introduced in order to make the results conform with existing functions (also the $15/8$ will have to be replaced with a 2).

Equations 28 are known as the asymptotic expansion of the corresponding series, defined by Eqs. 24, and provide good approximation values for the general solution of the basic differential equation when x is large.

THE SCHLEICHER FUNCTIONS

The Schleicher functions, designated by F_n , are defined below. Their relationship to the Bessel functions is also given. In each of the following definitions (eight in all) it is understood that the dummy index j takes on the values $0, 1, 2, 3, \dots, \infty$:

$$F_1 = \text{ber } x = \sum (-1)^j \frac{(\frac{1}{2}x)^{4j}}{[2j!]^2},$$

$$F_2 = -\text{bei } x = \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+2}}{[(2j+1)!]^2},$$

(29)

$$F_3 = -\frac{2}{\pi} \text{kei } x = -\frac{2}{x} \ln \frac{\delta x}{2} F_2 + \frac{1}{2} F_1 + \frac{2}{x} \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+2} S(2j+1)}{[(2j+1)!]^2},$$

$$F_4 = -\frac{2}{\pi} \text{ker } x = \frac{2}{x} \ln \frac{\delta x}{2} F_1 + \frac{1}{2} F_2 - \frac{2}{x} \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+4} S(2j+2)}{[(2j+2)!]^2}.$$

The first derivatives of the above functions with respect to x , designated as F'_n , are as follows:

$$F'_1 = \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+3}}{(2j+1)!(2j+2)!},$$

$$F'_2 = \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+1}}{2j!(2j+1)!},$$

(30)

$$F'_3 = -\frac{2}{x} \ln \frac{\delta x}{2} F'_2 - \frac{2}{x} \frac{F_2}{x} + \frac{1}{2} F'_1 + \frac{2}{x} \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+1} S(2j+1)}{(2j+1)! 2j!},$$

$$F'_4 = \frac{2}{x} \ln \frac{\delta x}{2} F'_1 + \frac{2}{x} \frac{F_1}{x} + \frac{1}{2} F'_2 - \frac{2}{x} \sum (-1)^{j+1} \frac{(\frac{1}{2}x)^{4j+3} S(2j+2)}{(2j+1)!(2j+2)!}.$$

The asymptotic expansions of the Schleicher functions are

$$\begin{aligned}
 F_1 &= \frac{1}{\sqrt{2\pi x}} e^{x/\sqrt{2}} \cos\left(\frac{x}{\sqrt{2}} - \frac{\pi}{8}\right), \\
 F_2 &= -\frac{1}{\sqrt{2\pi x}} e^{x/\sqrt{2}} \sin\left(\frac{x}{\sqrt{2}} - \frac{\pi}{8}\right), \\
 F_3 &= \sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \sin\left(\frac{x}{\sqrt{2}} + \frac{\pi}{8}\right), \\
 F_4 &= -\sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \cos\left(\frac{x}{\sqrt{2}} + \frac{\pi}{8}\right),
 \end{aligned}
 \tag{31}$$

and the first derivatives are

$$\begin{aligned}
 F'_1 &= \frac{1}{\sqrt{2\pi x}} e^{x/\sqrt{2}} \cos\left(\frac{x}{\sqrt{2}} + \frac{\pi}{8}\right), \\
 F'_2 &= -\frac{1}{\sqrt{2\pi x}} e^{x/\sqrt{2}} \sin\left(\frac{x}{\sqrt{2}} + \frac{\pi}{8}\right), \\
 F'_3 &= \sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \sin\left(\frac{x}{\sqrt{2}} + \frac{\pi}{8}\right), \\
 F'_4 &= \sqrt{\frac{2}{\pi x}} e^{-x/\sqrt{2}} \cos\left(\frac{x}{\sqrt{2}} - \frac{\pi}{8}\right).
 \end{aligned}
 \tag{32}$$

The following recurrence formulas may be used for obtaining the second (F''_n) (and hence higher) derivatives of the Schleicher functions:

$$\begin{aligned}
 F''_1 &= F_2 - \frac{1}{x} F'_1, \\
 F''_2 &= -F_1 - \frac{1}{x} F'_2, \\
 F''_3 &= F_4 - \frac{1}{x} F'_3, \\
 F''_4 &= -F_3 - \frac{1}{x} F'_4.
 \end{aligned}
 \tag{33}$$

It may be verified by substitution that the four solutions, U_n , of the basic fourth-order differential equation are expressed in terms of the Schleicher functions, F_n , for both the corresponding series definition of each and the corresponding asymptotic expansion of each, by the following equations:

$$\begin{aligned}
 U_1 &= F_1 + \frac{2}{x} F_2' , \\
 U_2 &= F_2 - \frac{2}{x} F_1' , \\
 U_3 &= F_3 + \frac{2}{x} F_4' , \\
 U_4 &= F_4 - \frac{2}{x} F_3' .
 \end{aligned}
 \tag{34}$$

Values of each of the four U_n functions may be readily obtained from Table 5, by the following relationships, which will be derived later:

$$\begin{aligned}
 U_1 &= -W_2' , \\
 U_2 &= W_1' , \\
 U_3 &= -W_4' , \\
 U_4 &= W_3' .
 \end{aligned}
 \tag{35}$$

DERIVATION OF THE CONICAL-SHELL FORMULAS

With the general solution of the basic differential equation given by Eq. 19, it is now possible to define the various functions of x which appear in the conical-shell formulas (1 to 7, inclusive) of part I. The procedure, in general, will be to transform the initial equations from the y -coordinate to the x -coordinate system, by the transformation

$$y = \frac{1}{\gamma} \frac{x^2}{4} \left(\text{hence } \frac{d(\dots)}{dy} = \frac{d(\dots)}{dx} \frac{2\gamma}{x} \right),$$

and then to determine the required functions by making appropriate substitutions. This will be done for each of the formulas of part I; γ , it is recalled, is equal to β^2 . In this section, only one equation will be written to represent the four equations, whenever it is possible and convenient to do so, by using the subscript n .

$$\text{Formula 1: } Q = \gamma \sum C_n Q_n$$

Formula 1 is obtained very readily from the definition of U (see statement following Eq. 3). Hence

$$Q = \frac{U}{\gamma} = \gamma \frac{4}{x^2} U.$$

Substitution in Eq. 19 (ref 4) gives

$$Q = \gamma \left(C_1 \frac{4}{x^2} U_1 + C_2 \frac{4}{x^2} U_2 + C_3 \frac{4}{x^2} U_3 + C_4 \frac{4}{x^2} U_4 \right) = \gamma \sum C_n \frac{4}{x^2} U_n,$$

and with the definition

$$Q_n = \frac{4}{x^2} U_n,$$

formula 1 is derived. The U_n functions are defined by Eqs. 34 and need not be repeated here.

$$\text{Formula 1a: } N_y = \gamma \tan \alpha (-\sum C_n Q_n + kK_1 + \rho P_1)$$

Formula 1a is obtained by merely transforming Eq. 1 over into the x -coordinate system and substituting Q for U/γ . Hence

$$N_y = -Q \tan \alpha + \frac{4\gamma k \tan \alpha}{x^2} + \frac{p}{2\gamma} \frac{x^2}{4} \tan \alpha.$$

⁴This step will not be repeated in the derivations that follow.

Formula 1a is derived by substituting formula 1 for Q , introducing the auxiliary functions

$$K_1 = \frac{4}{x^2} ,$$

$$P_1 = \frac{x^2}{4} ,$$

and the load parameter

$$\rho = \frac{p}{2\gamma^2} = \frac{p}{2\beta^4} ,$$

and then factoring out $\gamma \tan \alpha$.

$$\text{Formula 2: } N_{\theta} = \gamma \tan \alpha (-\sum C_n N_{\theta n} + \rho P_2)$$

Transforming Eq. 2 gives

$$N_{\theta} = \gamma \tan \alpha \left(-\frac{2}{x} \frac{dU}{dx} + \rho \frac{x^2}{2} \right) .$$

The derivative of the first of Eqs. 34,

$$\frac{dU_1}{dx} = F'_1 + \frac{2}{x} F''_2 - \frac{2}{x^2} F'_2 ,$$

when the second of Eqs. 33 is substituted, yields

$$\frac{dU_1}{dx} = F'_1 - \frac{2}{x} F_1 - \frac{4}{x^2} F'_2 ,$$

and so on, for the higher derivatives which will be required later. The remaining functions of U_n are treated in a similar manner. Formula 2 is derived by defining

$$N_{\theta n} = \frac{2}{x} \frac{dU_n}{dx} ,$$

which, in terms of the F functions, yields

$$N_{\theta n} = \frac{2}{x} F'_n - \frac{4}{x^2} F_n + (-1)^n \frac{8}{x^3} F'_{n-(-1)^n} ,$$

and introducing the auxiliary function

$$P_2 = \frac{x^2}{2} .$$

Formula 3: $M_y = \sum C_n M_{yn} - kK_2 - 3.9\rho$

Transforming Eqs. 6 and 11 gives, respectively,

$$M_y = \gamma D \left(\frac{2}{x} \frac{dV}{dx} + \mu \frac{4}{x^2} V \right) ,$$

$$(a) \quad V = \frac{\gamma \tan^2 \alpha}{Eb} \left[L_x(U) + k \frac{4}{x^2} - 3\rho \frac{x^2}{4} \right] ,$$

where L_x is the operator L (Eq. 10) transformed into the x -coordinate system and then divided by γ ; that is,

$$L_x = \frac{L \text{ (Eq. 10, transformed)}}{\gamma} ,$$

and therefore

$$L_x(U) = \frac{d^2 U}{dx^2} + \frac{1}{x} \frac{dU}{dx} - \frac{4}{x^2} U .$$

Then, since

$$\frac{dV}{dx} = \frac{\gamma \tan^2 \alpha}{Eb} \left[\frac{dL_x(U)}{dx} - \frac{8}{x^3} k - 3\rho \frac{x}{2} \right]$$

and since $\gamma^2 = \beta^4 = Eb/D \tan^2 \alpha$ (see statement following Eq. 16),

$$(b) \quad M_y = \frac{2}{x} \frac{dL_x(U)}{dx} + \frac{\mu^4}{x^2} L_x(U) - (1 - \mu) \left(\frac{4}{x^2} \right)^2 k - 3(1 + \mu) \rho .$$

Obtaining the required derivatives of U as illustrated during the derivation of formula 2 and combining yields

$$(c) \quad L_x(U_n) = -(-1)^n F'_{n-(-1)^n} - \frac{2}{x} F'_n ,$$

$$\frac{dL_x(U_n)}{dx} = -(-1)^n F'_{n-(-1)^n} + (-1)^n \frac{2}{x} F'_{n-(-1)^n} + \frac{4}{x^2} F'_n .$$

Formula 3 is derived by taking Poisson's ratio, μ , equal to 0.3, introducing the auxiliary function

$$K_2 = 0.7 \left(\frac{4}{x^2} \right)^2 ,$$

and defining

$$M_{yn} = \frac{2}{x} \frac{dL_x(U_n)}{dx} + \frac{1.2}{x^2} L_x(U) = -(-1)^n \frac{2}{x} F'_{n-(-1)^n} + (-1)^n \frac{2.8}{x^2} F'_{n-(-1)^n} + \frac{5.6}{x^3} F'_n .$$

Formula 4: $M_\theta = \sum C_n M_{\theta n} + kK_2 - 3.9\rho$

The procedure for determining formula 4 is very similar to that used in the derivation of formula 3. Hence the equation corresponding to Eq. b in the derivation of formula 3 is

$$M_\theta = \frac{4}{x^2} L_x(U) + \frac{\mu 2}{x} \frac{dL_x(U)}{dx} + (1 - \mu) \left(\frac{4}{x^2} \right)^2 k - 3(1 + \mu) \rho .$$

Formula 4 is derived by taking $\mu = 0.3$ and defining

$$M_{\theta n} = \frac{4}{x^2} L_x(U_n) + \frac{0.6}{x} \frac{dL_x(U_n)}{dx} = -(-1)^n \frac{0.6}{x} F'_{n-(-1)^n} - (-1)^n \frac{2.8}{x^2} F_{n-(-1)^n} - \frac{5.6}{x^3} F'_n .$$

Formula 5: $\frac{dw}{dy} = \frac{\gamma \tan^2 \alpha}{Eb} (\sum C_n W'_n + kK_1 - 3\rho P_1)$

Formula 5 has, in essence, already been derived during the derivation of formula 3, because in Eq. a of that derivation V is equal to dw/dy , by previous definition in part IV. Hence formula 5 is derived by defining

$$W'_n = L_x(U_n) ,$$

as given by Eq. c in the derivation of formula 3, and introducing the auxiliary functions K_1 and P_1 , as defined for formula 1a. It should be noted that writing the four equations represented by Eq. c and then comparing them with Eqs. 34 yields

$$U_n = (-1)^n W'_{n-(-1)^n} ,$$

which represents Eqs. 35.

Formula 6: $w = \frac{\tan^2 \alpha}{Eb} (\sum C_n W_n + kK_3 - \rho P_3 + C_5)$

Formula 6 is derived by integrating Eq. a, in the derivation for formula 3, with respect to y by the coordinate transformation relationship

$$\int V dy = \frac{1}{\gamma} \int V \frac{x}{2} dx .$$

Then, by Eq. a,

$$w = \frac{\tan^2 \alpha}{Eb} \left[\int \frac{x}{2} L_x(U) dx + k \ln \frac{x^2}{4} - \frac{3}{2} \left(\frac{x^2}{4} \right)^2 \rho + C_5 \right] ,$$

where C_5 is another constant of integration.

Letting $n = 1$ in Eq. c and multiplying by $x/2$ yields

$$\frac{x}{2} L_x(U_1) = \frac{x}{2} F_2 - F_1' .$$

Substituting

$$F_2 = F_1'' + \frac{1}{x} F_1' ,$$

obtained from the first of Eqs. 33, and integrating yields

$$\int \frac{x}{2} L_x(U_1) dx = \frac{x}{2} F_1' - F_1 .$$

Accordingly, formula 6 is derived by defining

$$\begin{aligned} W_n &= \int \frac{x}{2} L_x(U_n) dx \\ &= \frac{x}{2} F_n' - F_n \end{aligned}$$

and introducing the auxiliary functions

$$\begin{aligned} K_3 &= \ln \frac{x^2}{4} , \\ P_3 &= \frac{3}{2} \left(\frac{x^2}{4} \right)^2 . \end{aligned}$$

$$\text{Formula 7: } v = \frac{\tan \alpha}{Eb} (\Sigma C_n V_n + kK_4 + \rho P_4 + C_5)$$

It should be understood that the V_n appearing in formula 7 (and defined below) is not the same V_n used in part IV. There should be no confusion on this, since the V_n as defined in part IV is no longer needed.

Transforming Eq. 5 to the x -coordinate system yields

$$v = w \cot \alpha + \frac{x^2}{\gamma 4 Eb} (N_\theta - \mu N_y) .$$

Substituting formulas 1a, 2, and 6 for N_y , N_θ , and w , respectively, yields

$$\begin{aligned} v = \frac{\tan \alpha}{Eb} \left[\Sigma C_n \left(W_n - \frac{x^2}{4} N_{\theta n} + \frac{0.3x^2}{4} Q_n \right) + k \left(K_3 - \frac{0.3x^2}{4} K_1 \right) + \right. \\ \left. + \rho \left(-P_3 + \frac{x^2}{4} P_2 - \frac{0.3x^2}{4} P_1 \right) + C_5 \right] . \end{aligned}$$

Then formula 7 is derived by introducing the auxiliary functions

$$K_4 = K_3 - \frac{0.3x^2}{4} K_1$$

$$= \ln \frac{x^2}{4} - 0.3 ,$$

$$P_4 = -P_3 + \frac{x^2}{4} P_2 - \frac{0.3x^2}{4} P_1$$

$$= 0.2 \left(\frac{x^2}{4} \right)^2 ,$$

and defining

$$V_n = W_n - \frac{x^2}{4} N_{\theta n} + \frac{0.3x^2}{4} Q_n$$

$$= 0.3 F_n - (-1)^n \frac{2.6}{x} F'_{n-(-1)^n} .$$

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SUMMARY OF FUNCTIONS EVALUATED AND TABULATED IN PART II

For convenience, all the functions which have been derived and whose values are tabulated in part II are listed below in terms of the Schleicher functions and their first derivatives, F_n and F'_n . The series (exact) definition of each of the F and F' functions is given by Eqs. 29 and 30, respectively. These definitions were used in obtaining the values in set A, part II. The asymptotic expansion definition is given by Eqs. 31 and 32, respectively. These definitions were used in obtaining the values in set B, part II.

In addition to the use of the subscript n ($n = 1, 2, 3$, and 4), the letter m is also used in the definitions below, where

$$m = n - (-1)^n,$$

which may be visualized pictorially as follows:

$$\begin{array}{ccc} n & & m \\ \left. \begin{array}{c} 1 \\ 2 \end{array} \right\} & \text{interchanged} = & \left\{ \begin{array}{c} 2 \\ 1 \end{array} \right. \\ \left. \begin{array}{c} 3 \\ 4 \end{array} \right\} & \text{interchanged} = & \left\{ \begin{array}{c} 4 \\ 3 \end{array} \right. \end{array}$$

Table 1

$$Q_n = \frac{4}{x^2} F_n - (-1)^n \frac{8}{x^3} F'_m$$

Table 2

$$N_{\theta n} = \frac{2}{x} F'_n - \frac{4}{x^2} F_n + (-1)^n \frac{8}{x^3} F'_m$$

Table 3

$$M_{yn} = -(-1)^n \frac{2}{x} F'_m + (-1)^n \frac{2.8}{x^2} F_m + \frac{5.6}{x^3} F'_n$$

Table 4

$$M_{\theta n} = -(-1)^n \frac{0.6}{x} F'_n - (-1)^n \frac{2.8}{x^2} F_m - \frac{5.6}{x^3} F'_n$$

Table 5

$$W'_n = -(-1)^n F'_m - \frac{2}{x} F'_n$$

$$U_n = (-1)^n W'_m$$

Table 6

$$W_n = \frac{x}{2} F'_n - F_n$$

Table 7

$$V_n = 0.3 F_n - (-1)^n \frac{2.6}{x} F'_m$$

Table 8

The auxiliary K functions

$$K_1 = \frac{4}{x^2}$$

$$K_2 = 0.7 \left(\frac{4}{x^2} \right)^2$$

$$K_3 = \ln \frac{x^2}{4}$$

$$K_4 = \ln \frac{x^2}{4} - 0.3$$

Table 9

The auxiliary P functions

$$P_1 = \frac{x^2}{4}$$

$$P_2 = \frac{x^2}{2}$$

$$P_3 = \frac{3}{2} \left(\frac{x^2}{4} \right)^2$$

$$P_4 = 0.2 \left(\frac{x^2}{4} \right)^2$$

Part V

TABLES OF VALUES OF THE SCHLEICHER FUNCTIONS AND THEIR FIRST DERIVATIVES

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INTRODUCTION

It was shown in part IV that the basic functions for the various conical-shell formulas stem from the Schleicher functions and their first derivatives, which are designated by F_n and F'_n , respectively.

The series or exact definition of each of these functions is given by Eqs. 29 and 30 of part IV. Their values as obtained from these definitions are given in Tables 10A and 11A, part V, for x values from 0.05 to 16.00, inclusive. The asymptotic expansion (approximate) definition of each of these functions is given by Eqs. 31 and 32 of part IV. Their values as obtained from these definitions are given in tables 10B and 11B, part V, for x values from 10.00 to 40.00, inclusive.

The value of each function is listed to eight digits (followed by a minus sign in the case of negative values). The value of the function is the eight-digit number multiplied by ten raised to the power (number with sign) which precedes the eight-digit number; for example, the values of each of the four F_n functions at $x = 6.600$ from Table 10A are

$$F_1 = 7.3286881- = -7.3286881 ,$$

$$F_2 = 1 \ 1.5046992 = 1.5046992 \times 10 = 15.046992 ,$$

$$F_3 = 3- \ 2.7198377- = -2.7198377 \times 10^{-3} = -0.0027198377 ,$$

$$F_4 = 4- \ 9.4687499- = -9.4687499 \times 10^{-4} = -0.00094687499 .$$

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Tables in Set A

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The values of the functions in Tables 10A and 11A are based on the evaluation of the series definition of the Schleicher functions (Eqs. 29 and 30, part IV). Both tables in set A have the following ranges of x values and the corresponding increments of x :

Range of x Values	Increment of x
0.050– 5.00	0.050
5.000–10.00	0.100
10.00 –16.00	0.250

Table 10A
Values of the Four Schleicher Functions (F_n) Obtained from Their Series Definition

x	F_1	F_2	F_3	F_4
0.050	1- 9.99999990	4- 6.24999999-	1- 4.9836397	1.9812588-
0.100	1- 9.9999840	3- 2.49999996-	1- 4.9455846	1.5409214-
0.150	1- 9.9999210	3- 5.6249951-	1- 4.8920637	1.2843431-
0.200	1- 9.9997500	3- 9.9999720-	1- 4.8263732	1.1033528-
0.250	1- 9.9993900	2- 1.5624894-	1- 4.7507962	1- 9.6404247-
0.300	1- 9.9987340	2- 2.2499684-	1- 4.6670715	1- 8.5129970-
0.350	1- 9.9976550	2- 3.0624202-	1- 4.5765970	1- 7.5705595-
0.400	1- 9.9960000	2- 3.9998222-	1- 4.4805313	1- 6.7648734-
0.450	1- 9.9935931	2- 5.0621396-	1- 4.3798574	1- 6.0647590-
0.500	1- 9.9902343	2- 6.2493218-	1- 4.2754218	1- 5.4488652-
0.550	1- 9.9857026	2- 7.5612986-	1- 4.1679631	1- 4.9019062-
0.600	1- 9.9797511	2- 8.9979750-	1- 4.0581295	1- 4.4125432-
0.650	1- 9.9721102	1- 1.0559227-	1- 3.9464945	1- 3.9721140-
0.700	1- 9.9624879	1- 1.2244894-	1- 3.8335680	1- 3.5738446-
0.750	1- 9.9505688	1- 1.4054775-	1- 3.7198042	1- 3.2123200-
0.800	1- 9.9360114	1- 1.5988623-	1- 3.6056085	1- 2.8831370-
0.850	1- 9.9184555	1- 1.8046132-	1- 3.4913451	1- 2.5826591-
0.900	1- 9.8975132	1- 2.0226936-	1- 3.3773386	1- 2.3078409-
0.950	1- 9.8727780	1- 2.2530599-	1- 3.2638813	1- 2.0561013-
1.000	1- 9.8438178	1- 2.4956368-	1- 3.1512338	1- 1.8252284-
1.050	1- 9.8101772	1- 2.7504347-	1- 3.0396291	1- 1.6133087-
1.100	1- 9.7713794	1- 3.0173127-	1- 2.9292754	1- 1.4186722-
1.150	1- 9.7269255	1- 3.2962134-	1- 2.8203585	1- 1.2398501-
1.200	1- 9.6762916	1- 3.5870442-	1- 2.7130418	1- 1.0755410-
1.250	1- 9.6189341	1- 3.8896995-	1- 2.6074708	2- 9.2458500-
1.300	1- 9.5542871	1- 4.2040596-	1- 2.5037735	2- 7.8594150-
1.350	1- 9.4817630	1- 4.5299900-	1- 2.4020611	2- 6.5867270-
1.400	1- 9.4007505	1- 4.8673393-	1- 2.3024295	2- 5.4192940-
1.450	1- 9.3106208	1- 5.2159389-	1- 2.2049624	2- 4.3493840-
1.500	1- 9.2107215	1- 5.5756006-	1- 2.1097296	2- 3.3699420-
1.550	1- 9.1003825	1- 5.9461166-	1- 2.0167902	2- 2.4745000-
1.600	1- 8.9789114	1- 6.3272568-	1- 1.9261916	2- 1.6571130-
1.650	1- 8.8455978	1- 6.7187681-	1- 1.8379723	3- 9.1229600-
1.700	1- 8.6997120	1- 7.1203729-	1- 1.7521610	3- 2.3498500-
1.750	1- 8.5405075	1- 7.5317672-	1- 1.6687791	3- 3.7952300
1.800	1- 8.3672180	1- 7.9526195-	1- 1.5878383	3- 9.3558100
1.850	1- 8.1790623	1- 8.3825689-	1- 1.5093457	2- 1.4372490
1.900	1- 7.9752413	1- 8.8212234-	1- 1.4332999	2- 1.8883020
1.950	1- 7.7549438	1- 9.2681587-	1- 1.3596948	2- 2.2922690
2.000	1- 7.5173418	1- 9.7229160-	1- 1.2885186	2- 2.6524460
2.050	1- 7.2615949	1.0185001-	1- 1.2197547	2- 2.9719070
2.100	1- 6.9868497	1.0653881-	1- 1.1533804	2- 3.2535420
2.150	1- 6.6922443	1.1128985-	1- 1.0893726	2- 3.5000480
2.200	1- 6.3769046	1.1609700-	1- 1.0277000	2- 3.7139630
2.250	1- 6.0399486	1.2095368-	2- 9.6833020	2- 3.8976630

Table 10A (continued)

x	F ₁	F ₂	F ₃	F ₄
2.300	1- 5.6804889	1- 2.585289-	2- 9.1122940	2- 4.0533870
2.350	1- 5.2976319	1- 3.078718-	2- 8.15635990	2- 4.1832140
2.400	1- 4.8904777	1- 3.574855-	2- 8.10367830	2- 4.12891280
2.450	1- 4.4581291	1- 4.072855-	2- 7.15314390	2- 4.3729710
2.500	1- 3.9996838	1- 4.571821-	2- 7.10471370	2- 4.4364680
2.550	1- 3.5142459	1- 5.070797-	2- 6.5833930	2- 4.4812730
2.600	1- 3.0009209	1- 5.568778-	2- 6.1397410	2- 4.5089060
2.650	1- 2.4588197	1- 6.064695-	2- 5.7157090	2- 4.5208000
2.700	1- 1.8870626	1- 6.557424-	2- 5.3107970	2- 4.5183110
2.750	1- 1.2847822	1- 7.045777-	2- 4.9245040	2- 4.5027230
2.800	2- 6.5112109	1- 7.528505-	2- 4.5563300	2- 4.4752000
2.850	3- 1.4759189-	1- 8.004294-	2- 4.2057500	2- 4.4368700
2.900	2- 7.1367864-	1- 8.471762-	2- 3.8722800	2- 4.3887900
2.950	1- 1.464348-	1- 8.929459-	2- 3.5553700	2- 4.3319300
3.000	1- 2.2138025-	1- 9.375867-	2- 3.2545200	2- 4.2672200
3.050	1- 3.0165247-	1- 9.809399-	2- 2.9692300	2- 4.1954800
3.100	1- 3.8553149-	2- 2.0228390-	2- 2.6989700	2- 4.1175700
3.150	1- 4.7308486-	2- 2.0631105-	2- 2.4432500	2- 4.0342000
3.200	1- 5.6437644-	2- 2.1015733-	2- 2.2015700	2- 3.9460700
3.250	1- 6.5946560-	2- 2.1380387-	2- 1.9734300	2- 3.8538500
3.300	1- 7.5840704-	2- 2.1723102-	2- 1.7583200	2- 3.7581500
3.350	1- 8.6125017-	2- 2.2041832-	2- 1.5557800	2- 3.6595200
3.400	1- 9.6803900-	2- 2.2334458-	2- 1.3653100	2- 3.5584900
3.450	1- 1.0788112-	2- 2.2598774-	2- 1.1864500	2- 3.4555300
3.500	1- 1.1935981-	2- 2.2832500-	2- 1.0187600	2- 3.3511300
3.550	1- 3.124240-	2- 3.033269-	3- 8.6175000	2- 3.2456400
3.600	1- 4.353052-	2- 3.198636-	3- 7.1499000	2- 3.1395400
3.650	1- 5.622507-	2- 3.326076-	3- 5.7807000	2- 3.0330600
3.700	1- 6.932598-	2- 3.412978-	3- 4.5053000	2- 2.9266500
3.750	1- 8.283238-	2- 3.456653-	3- 3.3194000	2- 2.8205200
3.800	1- 9.674233-	2- 3.454331-	3- 2.2197000	2- 2.7149700
3.850	2- 1.1105287-	2- 3.403162-	3- 1.2015000	2- 2.6102800
3.900	2- 2.2575994-	2- 3.300220-	4- 2.6140000	2- 2.5066000
3.950	2- 4.085835-	2- 3.142493-	4- 6.0430000-	2- 2.4041800
4.000	2- 5.634166-	2- 2.926903-	3- 1.3997000-	2- 2.3032100
4.050	2- 7.220209-	2- 2.650291-	3- 2.1277000-	2- 2.2038300
4.100	2- 8.843057-	2- 2.309427-	3- 2.7922000-	2- 2.1062100
4.150	3- 0.501656-	2- 1.901013-	3- 3.3962000-	2- 2.0104600
4.200	3- 2.194798-	2- 1.421679-	3- 3.9431000-	2- 1.9167100
4.250	3- 3.921126-	2- 0.867997-	3- 4.4358000-	2- 1.8250100
4.300	3- 5.679108-	2- 0.236471-	3- 4.8774000-	2- 1.7355300
4.350	3- 7.467049-	1- 9.523552-	3- 5.2708000-	2- 1.6482900
4.400	3- 9.283066-	1- 8.725638-	3- 5.6186000-	2- 1.5633600
4.450	4- 1.125094-	1- 7.839077-	3- 5.9237000-	2- 1.4807500
4.500	4- 2.990865-	1- 6.860173-	3- 6.1886000-	2- 1.4005600

Table 10A (continued)

x	F ₁	F ₂	F ₃	F ₄
4.550	4.4877916-	1.5785192-	6.4157000-	2- 1.3227500
4.600	4.6783570-	1.4610368-	6.6076000-	2- 1.2475200
4.650	4.8704924-	1.3331909-	6.7663000-	2- 1.1746100
4.700	5.0638855-	1.1946009-	6.8939000-	2- 1.1041400
4.750	5.2582004-	1.0448837-	6.9928500-	2- 1.0362500
4.800	5.4530762-	8.8365685-	7.0649300-	3- 9.7073000
4.850	5.6481275-	7.1053826-	7.1125800-	3- 9.0765000
4.900	5.8429423-	5.2514692-	7.1365100-	3- 8.4701000
4.950	6.0370829-	3.2710387-	7.1392300-	3- 7.8873000
5.000	6.2300825-	1.1603468-	7.1221419-	3- 7.3290833
5.100	6.6106538-	3.4666333	7.0361164-	3- 6.2799550
5.200	6.9803462-	8.6583981	6.8888894-	3- 5.3216660
5.300	7.3343633-	1.442603	6.6920431-	3- 4.4503757
5.400	7.6673939-	2.0845165	6.4551979-	3- 3.6607762
5.500	7.9735969-	2.7889802	6.1857828-	3- 2.9490126
5.600	8.2465764-	3.5597468	5.8926380-	3- 2.3116227
5.700	8.4793730-	4.3985794	5.5813295-	3- 1.749420
5.800	8.6644449-	5.13068446	5.2574140-	3- 1.2428677
5.900	8.7936665-	6.12854454	4.9273122-	4- 8.0157692
6.000	8.8583161-	7.3347465	4.5953540-	4- 4.1622078
6.100	8.8490811-	8.4544949	4.2634623-	5- 8.2635408
6.200	8.7560624-	9.6437393	3.9371247-	4- 2.0328081-
6.300	8.5687929-	1.0900738	3.6189690-	4- 4.4377983-
6.400	8.2762493-	1.1222863	3.3065530-	4- 6.4710343-
6.500	7.8668913-	1.3606512	3.0077667-	4- 8.11175935-
6.600	7.3286881-	1.5046992	2.7198377-	4- 9.4687499-
6.700	6.6491770-	1.6538423	2.4496180-	3- 1.0525594-
6.800	5.8155155-	1.8073623	2.1894921-	3- 1.1300194-
6.900	4.8145574-	1.9643991	1.948437-	3- 1.1869725-
7.000	3.6329300-	2.1239402	1.7196270-	3- 1.2229625-
7.100	2.2571457-	2.2848078	1.5090732-	3- 1.239069-
7.200	6.7369569-	2.456480	1.3121766-	3- 1.244357-
7.300	1.1307979	2.6049183	1.1243843-	3- 1.2302303-
7.400	3.1694570	2.7608771	9.6517569-	3- 1.2094203-
7.500	5.4549608	2.9115711	8.0672546-	3- 1.1872150-
7.600	7.9993814	3.0548262	6.6997403-	3- 1.1464135-
7.700	1.0813964	3.1882361	5.3501626-	3- 1.0972659-
7.800	1.3908913	3.3091540	4.3122943-	3- 1.0503444-
7.900	1.7293125	3.4146835	3.3271584-	4- 9.9537551-
8.000	2.0973956	3.5016725	2.3528442-	4- 9.4591137-
8.100	2.4956881	3.5667081	1.5535577-	4- 8.8921900-
8.200	2.9245215	3.6061120	8.5244328-	4- 8.3167086-
8.300	3.3839755	3.6159401	2.4248438-	4- 7.7396611-
8.400	3.87838423	3.5919830	2.8323741	4- 7.1670501-
8.500	4.3935873	3.5297700	7.3148791	4- 6.6039719-

Table 10A (continued)

x	F ₁	F ₂	F ₃	F ₄
8.600	1 4.9423085	1 3.4245761	4- 1.1088353	4- 6.0546971-
8.700	1 5.5186932	1 3.2714319	4- 1.4216133	4- 5.5227466-
8.800	1 6.1209725	1 3.0651388	4- 1.6758925	4- 5.0109650-
8.900	1 6.7468741	1 2.8002868	4- 1.8774574	4- 4.5215893-
9.000	1 7.3935730	1 2.64712783	4- 2.0317908	4- 4.0563139-
9.100	1 8.0576411	1 2.0723570	4- 2.1440626	4- 3.6163521-
9.200	1 8.7349953	1 1.5976414	4- 2.2191233	4- 3.2024924-
9.300	1 9.4208443	1 1.0411662	4- 2.2615020	4- 2.8151519-
9.400	2 1.0109636	3 3.9692853	4- 2.27544075	4- 2.14544251-
9.500	2 1.0795003	3 3.4105733-	4- 2.2647324	4- 2.1201291-
9.600	2 1.1469711	1 1.1786984-	4- 2.2330598	4- 1.8118450-
9.700	2 1.2125607	1 2.1217532-	4- 2.1836722	4- 1.5289558-
9.800	2 1.2753565	1 3.11757531-	4- 2.1195617	4- 1.2706802-
9.900	2 1.3343446	1 4.3459153-	4- 2.0434422	4- 1.0361045-
10.000	2 1.3884047	1 5.6370459-	4- 1.9577617	5- 8.2420961-
10.250	2 1.4936394	1 9.4206597-	4- 1.7155615	5- 3.8635230-
10.500	2 1.5376858	2 1.4032375-	4- 1.4547893	6- 6.4857267-
10.750	2 1.4935275	2 1.9480836-	4- 1.1956795	5- 1.5923552
11.000	2 1.3295440	2 2.15720521-	5- 9.5198010	5- 3.0425160
11.250	2 1.0098659	2 3.2633351-	5- 7.3225380	5- 3.8707861
11.500	1 4.9516605	2 4.0007981-	5- 5.4104857	5- 4.2269620
11.750	1 2.5599158-	2 4.7517279-	5- 3.7991652	5- 4.2395879
12.000	2 1.2851163-	2 5.4694855-	5- 2.4827379	5- 4.0156278
12.250	2 2.6309333-	2 6.0911871-	5- 1.4410510	5- 3.6414168
12.500	2 4.3255750-	2 6.5355892-	6- 6.4524028	5- 3.1844348
12.750	2 6.3897018-	2 6.7014066-	7- 6.2042135	5- 2.6955470
13.000	2 8.8264662-	2 6.4663565-	6- 3.4301159-	5- 2.2114437
13.250	3 1.1614273-	2 5.6872880-	6- 6.0333737-	5- 1.7570834
13.500	3 1.4698363-	2 4.2018270-	6- 7.4980905-	5- 1.3480066
13.750	3 1.7981329-	2 1.8320332-	6- 8.0987226-	6- 9.9243531
14.000	3 2.1312812-	2 1.6093769	6- 8.0712251-	6- 6.9311274
14.250	3 2.4478753-	2 6.3096374	6- 7.6122418-	6- 4.4886405
14.500	3 2.7190803-	3 1.242754	6- 6.8806809-	6- 2.5588201
14.750	3 2.9076679-	3 2.0151933	6- 6.0008427-	6- 1.0875365
15.000	3 2.96722545-	3 2.19527079	6- 5.0664541-	8- 1.2535670
15.250	3 2.8441870-	3 4.0576953	6- 4.61450988-	7- 7.3065801-
15.500	3 2.4660737-	3 5.3195798	6- 3.2826826-	6- 1.2045664-
15.750	3 1.7656697-	3 6.7124536	6- 2.5076896-	6- 1.4669754-
16.000	2 6.5949690-	3 8.1907100	6- 1.8350563-	6- 1.5692791-

Table 11A

Values of the First Derivatives of the Four Schlächer Functions (F_n') Obtained from Their Series Definition

x	F_1'	F_2'	F_3'	F_4'
0.050	6- 7.8125000-	2- 2.4999999-	2- 5.7485316-	1 1.2719916
0.100	5- 6.2499995-	2- 4.9999974-	2- 9.2930446-	6.3413433
0.150	4- 2.1093741-	2- 7.4999802-	1- 1.2009437-	4.2070700
0.200	4- 4.9999931-	2- 9.9999170-	1- 1.4191961-	3.1340463
0.250	4- 9.7655919-	1- 1.2499746-	1- 1.5981522-	2.4856914
0.300	3- 1.6874881-	1- 1.4999367-	1- 1.7461976-	2.0498298
0.350	3- 2.6796526-	1- 1.7498632-	1- 1.8689420-	1.7355415
0.400	3- 3.9999111-	1- 1.9997333-	1- 1.9704272-	1.4973742
0.450	3- 5.6951098-	1- 2.2495195-	1- 2.0537207-	1.3100820
0.500	3- 7.8120761-	1- 2.4991862-	1- 2.1212410-	1.1585204
0.550	2- 1.0397612-	1- 2.7486894-	1- 2.1749517-	1.0330545
0.600	2- 1.3498481-	1- 2.9979751-	1- 2.2164835-	1- 9.2726121
0.650	2- 1.7161403-	1- 3.2469785-	1- 2.2472163-	1- 8.3669447
0.700	2- 2.1433032-	1- 3.4956235-	1- 2.2683365-	1- 7.5817800
0.750	2- 2.6359946-	1- 3.7438207-	1- 2.2808743-	1- 6.8938181
0.800	2- 3.1988622-	1- 3.9914676-	1- 2.2857355-	1- 6.2855706
0.850	2- 3.8365422-	1- 4.2384468-	1- 2.2837233-	1- 5.7436542
0.900	2- 4.5536553-	1- 4.4846253-	1- 2.2755541-	1- 5.2576427
0.950	2- 5.3548056-	1- 4.7298538-	1- 2.2618715-	1- 4.8192911
1.000	2- 6.2445753-	1- 4.9739651-	1- 2.2432566-	1- 4.4219856
1.050	2- 7.2275235-	1- 5.2167740-	1- 2.2202359-	1- 4.0603551
1.100	2- 8.3081791-	1- 5.4580756-	1- 2.1932887-	1- 3.7299883
1.150	2- 9.4910401-	1- 5.6976448-	1- 2.1628527-	1- 3.4272253
1.200	1- 1.0780564-	1- 5.9352350-	1- 2.1293273-	1- 3.1489967
1.250	1- 1.2181169-	1- 6.1705776-	1- 2.0930800-	1- 2.8927092
1.300	1- 1.3697217-	1- 6.4033810-	1- 2.0544471-	1- 2.6561516
1.350	1- 1.5333022-	1- 6.6333293-	1- 2.0137384-	1- 2.4374253
1.400	1- 1.7092833-	1- 6.8600818-	1- 1.9712396-	1- 2.2348858
1.450	1- 1.8980826-	1- 7.0832720-	1- 1.9272126-	1- 2.0471021
1.500	1- 2.1001102-	1- 7.3025067-	1- 1.8818996-	1- 1.8728179
1.550	1- 2.3157675-	1- 7.5173655-	1- 1.8355234-	1- 1.7109275
1.600	1- 2.5454463-	1- 7.7273991-	1- 1.7882894-	1- 1.5604482
1.650	1- 2.7895280-	1- 7.9321299-	1- 1.7403869-	1- 1.4205047
1.700	1- 3.0483821-	1- 8.1310495-	1- 1.6919901-	1- 1.2903117
1.750	1- 3.3223655-	1- 8.3236194-	1- 1.6432592-	1- 1.1691643
1.800	1- 3.6118212-	1- 8.5092695-	1- 1.5943414-	1- 1.0564223
1.850	1- 3.9170774-	1- 8.6873978-	1- 1.5453720-	2- 9.5150600
1.900	1- 4.2384452-	1- 8.8573695-	1- 1.4964748-	2- 8.5388620
1.950	1- 4.5762184-	1- 9.0185163-	1- 1.4477632-	2- 7.6308010
2.000	1- 4.9306713-	1- 9.1701364-	1- 1.3993406-	2- 6.7864270
2.050	1- 5.3020572-	1- 9.3114925-	1- 1.3513019-	2- 6.0016520
2.100	1- 5.6906076-	1- 9.4418134-	1- 1.3037323-	2- 5.2726970
2.150	1- 6.0965286-	1- 9.5602920-	1- 1.2567087-	2- 4.5960670
2.200	1- 6.5200024-	1- 9.6660858-	1- 1.2103019-	2- 3.9685150
2.250	1- 6.9611812-	1- 9.7583159-	1- 1.1645750-	2- 3.3870090

Table 11A (continued)

x	F_1'	F_2'	F_3'	F_4'
2.300	1- 7.4201895-	1- 9.8360668-	1- 1.1195841-	2- 2.8487410
2.350	1- 7.8971182-	1- 9.8983870-	1- 1.0753785-	2- 2.3510640
2.400	1- 8.3920272-	1- 9.9442864-	1- 1.0320048-	2- 1.8915420
2.450	1- 8.9049375-	1- 9.9727416-	2- 9.8949980-	2- 1.4678330
2.500	1- 9.4358341-	1- 9.9826880-	2- 9.4789770-	2- 1.0777830
2.550	1- 9.9846604-	1- 9.9730293-	2- 9.0722880-	3- 7.1935000
2.600	1.0551317-	1- 9.9426298-	2- 8.6751420-	3- 3.9061800
2.650	1.1135664-	1- 9.8903161-	2- 8.2878040-	4- 8.9770000
2.700	1.1737503-	1- 9.8148842-	2- 7.9103790-	3- 1.8491000-
2.750	1.2356593-	1- 9.7150884-	2- 7.5430250-	3- 4.3498000-
2.800	1.2992641-	1- 9.5896542-	2- 7.1858420-	3- 6.6202000-
2.850	1.3645293-	1- 9.4372711-	2- 6.8388730-	3- 8.6745000-
2.900	1.4314141-	1- 9.2565931-	2- 6.5021930-	2- 1.0526000-
2.950	1.4998710-	1- 9.0462459-	2- 6.1757840-	2- 1.2187800-
3.000	1.5698466-	1- 8.8048233-	2- 5.8596450-	2- 1.3672100-
3.050	1.6412803-	1- 8.5308885-	2- 5.5537320-	2- 1.4990400-
3.100	1.7141044-	1- 8.2229770-	2- 5.2579860-	2- 1.6153500-
3.150	1.7882442-	1- 7.8795985-	2- 4.9723342-	2- 1.7171600-
3.200	1.8636169-	1- 7.4992372-	2- 4.6966757-	2- 1.8054700-
3.250	1.9401319-	1- 7.0803546-	2- 4.4309146-	2- 1.8812100-
3.300	2.0176900-	1- 6.6213919-	2- 4.1749190-	2- 1.9452400-
3.350	2.0961833-	1- 6.1207706-	2- 3.9285460-	2- 1.9983600-
3.400	2.1754952-	1- 5.5768978-	2- 3.6916520-	2- 2.0414000-
3.450	2.2554991-	1- 4.9881671-	2- 3.4640600-	2- 2.0750800-
3.500	2.3360591-	1- 4.3529615-	2- 3.2456180-	2- 2.1001300-
3.550	2.4170292-	1- 3.6696567-	2- 3.0361610-	2- 2.1171800-
3.600	2.4982526-	1- 2.9366241-	2- 2.8354810-	2- 2.1268500-
3.650	2.5795620-	1- 2.1522359-	2- 2.6433660-	2- 2.1298000-
3.700	2.6607789-	1- 1.3148677-	2- 2.4596660-	2- 2.1264900-
3.750	2.7417135-	2- 4.2290172-	2- 2.2841720-	2- 2.1175300-
3.800	2.8221639-	2- 5.2526496-	2- 2.1166500-	2- 2.1034000-
3.850	2.9019160-	1- 1.5312258-	2- 1.9568900-	2- 2.0845200-
3.900	2.9807433-	1- 2.5965408-	2- 1.8047100-	2- 2.0613900-
3.950	3.0584069-	1- 3.7227547-	2- 1.6599000-	2- 2.0344200-
4.000	3.1346540-	1- 4.9113738-	2- 1.5222100-	2- 2.0039700-
4.050	3.2092187-	1- 6.1638692-	2- 1.3914600-	2- 1.9704400-
4.100	3.2818214-	1- 7.4816679-	2- 1.2674000-	2- 1.9341600-
4.150	3.3521682-	1- 8.8661469-	2- 1.1498300-	2- 1.8954500-
4.200	3.4199513-	1.0318621	2- 1.0385700-	2- 1.8546200-
4.250	3.4848477-	1.1840351	3- 9.3338000-	2- 1.8119700-
4.300	3.5465198-	1.3432520	3- 8.3404000-	2- 1.7677100-
4.350	3.6046149-	1.5096233	3- 7.4035000-	2- 1.7221500-
4.400	3.6587652-	1.6832508	3- 6.5212000-	2- 1.6754900-
4.450	3.7085873-	1.8642274	3- 5.6914000-	2- 1.6279500-
4.500	3.7536813-	2.0526347	3- 4.9119000-	2- 1.5797200-

Table 11A (continued)

x	F_1^*	F_2^*	F_3^*	F_4^*
4.550	3.7936328-	2.2485433	3- 4.1809000-	2- 1.5310100-
4.600	3.8280104-	2.4520126	3- 3.4967000-	2- 1.4819900-
4.650	3.8563671-	2.6630874	3- 2.8568000-	2- 1.4327700-
4.700	3.8782398-	2.8817990	3- 2.2599000-	2- 1.3835700-
4.750	3.8931488-	3.1081638	3- 1.7039000-	2- 1.3344500-
4.800	3.900592-	3.3421813	3- 1.1872000-	2- 1.2855800-
4.850	3.9000792-	3.5838337	4- 7.0840000-	2- 1.2370500-
4.900	3.8910606-	3.8330851	4- 2.6440000-	2- 1.1889600-
4.950	3.8730004-	4.0898799	4- 1.4480000	2- 1.1414000-
5.000	3.8453394-	4.3541404	4- 5.2156625	2- 1.0945793-
5.100	3.7589009-	4.9046410	3- 1.1838674	2- 1.0029306-
5.200	3.6269667-	5.4835048	3- 1.1736044	3- 9.1467517-
5.300	3.4445272-	6.0892322	3- 2.1846433	3- 8.3008420-
5.400	3.2063564-	6.7198595	3- 2.5463288	3- 7.4956273-
5.500	2.9070322-	7.3729135	3- 2.8247401	3- 6.7328227-
5.600	2.5409596-	8.0453642	3- 3.0355465	3- 6.0146016-
5.700	2.1024014-	8.7335753	3- 3.1834413	3- 5.3393244-
5.800	1.5855125-	9.4332517	3- 3.2749531	3- 4.7101817-
5.900	9.8438231-	1.0139389	3- 3.3197166	3- 4.1254784-
6.000	2.9307997-	1.0846224	3- 3.3247578	3- 3.5840922-
6.100	4.9428872	1.1547179	3- 3.62934138	3- 3.0871017-
6.200	1.3835223	1.2234814	3- 3.62349927	3- 2.6303577-
6.300	2.3802473	1.2900778	3- 3.1508262	3- 2.2140452-
6.400	3.4898517	1.3535756	3- 3.0461828	3- 1.8354621-
6.500	4.7173807	1.4129423	3- 2.9284542	3- 1.4949435-
6.600	6.0674613	1.4670413	3- 2.7960261	3- 1.1887119-
6.700	7.5441794	1.5146266	3- 2.6536971	4- 9.1304586-
6.800	9.1509724	1.5543404	3- 2.5069532	4- 6.7137400-
6.900	1.0890503	1.5847109	3- 2.3564071	4- 4.5502988-
7.000	1.2764522	1.6041489	3- 2.11990005	4- 2.6735588-
7.100	1.4773722	1.6109483	3- 2.0486965	4- 1.0178814-
7.200	1.6917585	1.6032855	3- 1.8975003	5- 3.6278774
7.300	1.9194203	1.5792207	3- 1.7483413	4- 1.5756755
7.400	2.1600120	1.5366999	3- 1.6027393	4- 2.5930636
7.500	2.4130123	1.4735603	3- 1.4613064	4- 3.4095278
7.600	2.6777064	1.3875332	3- 1.3228157	4- 4.1400230
7.700	2.9531637	1.2762552	3- 1.2006145	4- 4.7122870
7.800	3.2382176	1.1372739	3- 1.0694265	4- 5.0972104
7.900	3.5314424	9.16806244	4- 9.15694848	4- 5.4429170
8.000	3.8311326	7.6603184	4- 8.15072323	4- 5.6004972
8.100	4.1352754	5.2854904	4- 7.14902593	4- 5.72245452
8.200	4.44415316	2.5295546	4- 6.5437345	4- 5.7734450
8.300	4.7472095	6.3409791-	4- 5.6669834	4- 5.7575146
8.400	5.0492416	4.2318410-	4- 4.8587362	4- 5.6862255
8.500	5.3441618	8.2895192-	4- 4.11172269	4- 5.5682328

Table 11A (continued)

$\%$		F_1		F_2		F_3		F_4
8.600	1	5.6280822	1	1.2832117-	4-	3.4402818	4-	5.4114073
8.700	1	5.8966717	1	1.7883388-	4-	2.8254003	4-	5.2228726
8.800	1	6.1451355	1	2.3465444-	4-	2.2698261	4-	5.0090421
8.900	1	6.3681961	1	2.9598302-	4-	1.7706117	4-	4.7756588
9.000	1	6.5600771	1	3.6299384-	4-	1.3246744	4-	4.5278357
9.100	1	6.7144889	1	4.3582976-	5-	9.2884602	4-	4.2700955
9.200	1	6.8246178	1	5.1459634-	5-	5.7991666	4-	4.0064118
9.300	1	6.8831185	1	5.9935547-	5-	2.7467179	4-	3.7402486
9.400	1	6.8821114	1	6.9011850-	7-	9.9246012	4-	3.4745992
9.500	1	6.8131840	1	7.8683889-	5-	2.1745673-	4-	3.2120248
9.600	1	6.6673989	1	8.8940434-	5-	4.1052620-	4-	2.9546906
9.700	1	6.4353071	1	9.9762855-	5-	5.7224116-	4-	2.7044018
9.800	1	6.1069692	2	1.1112424-	5-	7.0544715-	4-	2.4626370
9.900	1	5.6719839	2	1.2298848-	5-	8.1286597-	4-	2.2305803
10.000	1	5.1195258	2	1.3530930-	5-	8.9708667-	4-	2.0091520
10.250	1	3.1501538	2	1.6770182-	4-	1.0218703-	4-	1.5060667
10.500		1.9344189	2	2.0130360-	4-	1.0509108-	4-	1.0786144
10.750	1	3.9371391-	2	2.3428207-	4-	1.0128897-	5-	7.2639758
11.000	1	9.4211852-	2	2.6411937-	5-	9.3107517-	5-	4.4502005
11.250	2	1.6416130-	2	2.8751316-	5-	8.2377116-	5-	2.2759630
11.500	2	2.5037442-	2	3.0029211-	5-	7.0489326-	6-	6.5915689
11.750	2	3.5333790-	2	2.9735813-	5-	5.8459922-	6-	4.8690837-
12.000	2	4.7256882-	2	2.7267002-	5-	4.6992331-	5-	1.2473372-
12.250	2	6.0625941-	2	2.1928651-	5-	3.6537908-	5-	1.7015159-
12.500	2	7.5087147-	2	1.2948953-	5-	2.7350823-	5-	1.9205948-
12.750	2	9.0068843-		4.9882441	5-	1.9536305-	5-	1.9662115-
13.000	3	1.0473396-	2	1.9260574	5-	1.3091748-	5-	1.8901307-
13.250	3	1.1793188-	2	4.4149787	6-	7.9407172-	5-	1.7345316-
13.500	3	1.2815285-	2	7.5877449	6-	3.9602568-	5-	1.5327245-
13.750	3	1.3348928-	3	1.1496082	6-	1.0021472-	5-	1.3101211-
14.000	3	1.3160939-	3	1.66160894	6-	1.0911436	5-	1.0853283-
14.250	3	1.1975007-	3	2.1558360	6-	2.4749994	6-	8.7126753-
14.500	2	9.4737259-	3	2.7603541	6-	3.2948978	6-	6.7624995-
14.750	2	5.3043603-	3	3.4131681	6-	3.6816185	6-	5.0496602-
15.000	1	9.1055333	3	4.0877552	6-	3.7487283	6-	3.5936026-
15.250	2	9.5565620	3	4.7453529	6-	3.5917947	6-	2.3938173-
15.500	3	2.1003324	3	5.3327431	6-	3.2888043	6-	1.4360836-
15.750	3	3.5572029	3	5.7801606	6-	2.9014092	7-	6.9749776-
16.000	3	5.3493019	3	5.9995236	6-	2.4766505	7-	1.5041412-

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Tables in Set B

10B, Values of the Four Schleicher Functions (F_n) Obtained from Their Asymptotic Expansion Definition.....	132
11B, Values of the First Derivatives of the Four Schleicher Functions (F'_n) Obtained from Their Asymptotic Expansion Definition.....	135

The values of the functions in Tables 10B and 11B are based on the evaluation of the asymptotic expansion definition of the Schleicher functions (Eqs. 31 and 32, part IV). Both tables in set B include the range of x values from 10.00 to 40.00, inclusive, in increments of 0.250.

Table 10B

Values of the Four Schlöchter Functions (F_n) Obtained from Their Asymptotic Expansion Definition

x		F_1		F_2		F_3		F_4
10.000	2	1.3708900	1	5.7183547-	4-	1.9818696	5-	8.1515473-
10.250	2	1.4721808	1	9.4769794-	4-	1.7334485	5-	3.7570641-
10.500	2	1.5122523	2	1.4052450-	4-	1.4675114	6-	5.3825034-
10.750	2	1.4643065	2	1.9451788-	4-	1.2042416	5-	1.6984568
11.000	2	1.2970047	2	2.5628049-	5-	9.5729190	5-	3.1393783
11.250	1	9.7482726	2	3.2462086-	5-	7.3510816	5-	3.9556900
11.500	1	4.5886825	2	3.9742020-	5-	5.4211388	5-	4.2988518
11.750	1	2.9181601-	2	4.7140950-	5-	3.7973948	5-	4.2985575
12.000	2	1.3181758-	2	5.4193715-	5-	2.4728844	5-	4.0625167
12.250	2	2.6583213-	2	6.0274007-	5-	1.4264556	5-	3.6775023
12.500	2	4.3437302-	2	6.4573510-	6-	6.2838787	5-	3.2112045
12.750	2	6.3943952-	2	6.6085391-	7-	4.4705413	5-	2.7145373
13.000	2	8.8128230-	2	6.3595056-	6-	3.5963498-	5-	2.2241314
13.250	3	1.1576844-	2	5.5681737-	6-	6.1850083-	5-	1.7648177
13.500	3	1.4631254-	2	4.0735157-	6-	7.6310888-	5-	1.3519729
13.750	3	1.7878406-	2	1.6992250-	6-	8.2115641-	6-	9.9364096
14.000	3	2.1167992-	2	1.7400580	6-	8.1641531-	6-	6.9238816
14.250	3	2.4286385-	2	6.4293651	6-	7.6866720-	6-	4.4687515
14.500	3	2.6946224-	3	1.2540274	6-	6.9387189-	6-	2.5314687
14.750	3	2.8776792-	3	2.0213382	6-	6.0449558-	6-	1.0566493
15.000	3	2.9316578-	3	2.9535895	6-	5.0992131-	8-	1.9002452-
15.250	3	2.8009240-	3	4.0514012	6-	4.1689808-	7-	7.6079504-
15.500	3	2.4204390-	3	5.3039623	6-	3.2999715-	6-	1.2318812-
15.750	3	1.7165620-	3	6.6851755	6-	2.5203958-	6-	1.4905098-
16.000	2	6.0878324-	3	8.1493430	6-	1.8448638-	6-	1.5883883-
16.250	2	9.8737552	3	9.6264256	6-	1.2778284-	6-	1.5699199-
16.500	3	3.1559706	4	1.1017160	7-	8.1648682-	6-	1.4720641-
16.750	3	5.9745232	4	1.2188290	7-	4.5317852-	6-	1.3246389-
17.000	3	9.5058573	4	1.2968158	7-	1.7730975-	6-	1.1509289-
17.250	4	1.3787670	4	1.3143345	8-	2.3170063	7-	9.6844469-
17.500	4	1.8819706	4	1.2456917	7-	1.6066567	7-	7.8976054-
17.750	4	2.4548284	4	1.0608924	7-	2.4715637	7-	6.2336639-
18.000	4	3.0848445	3	7.2603114	7-	2.9368111	7-	4.7446833-
18.250	4	3.7503822	3	2.0411291	7-	3.1003338	7-	3.4572261-
18.500	4	4.4185004	3	5.4356747-	7-	3.0461613	7-	2.3787806-
18.750	4	5.0426769	4	1.5553668-	7-	2.8441916	7-	1.5032604-
19.000	4	5.5606052	4	2.8664116-	7-	2.5507731	8-	8.1550522-
19.250	4	5.8922270	4	4.5047864-	7-	2.2098359	8-	2.9489390-
19.500	4	5.9381756	4	6.4866448-	7-	1.8543640	9-	8.1857238
19.750	4	5.5790179	4	8.8101902-	7-	1.5079817	8-	3.3862521
20.000	4	4.6756221	5	1.1448514-	7-	1.1865585	8-	4.9841010
20.250	4	3.0710239	5	1.4341220-	8-	8.9974789	8-	5.8236807
20.500	3	5.9440177	5	1.7385099-	8-	6.5237480	8-	6.0923981
20.750	4	2.9323602-	5	2.0424006-	8-	4.4566092	8-	5.9508522
21.000	4	7.6849089-	5	2.3238488-	8-	2.7826439	8-	5.5324118

Table 10B (continued)

$\times$	F_1	F_2	F_3	F_4
21.250	5 1.3822821-	5 2.5535493+	8- 1.4714203	8- 4.9444414
21.500	5 2.1471572-	5 2.6939342-	9- 4.8233115	8- 4.2704963
21.750	5 3.0699672-	5 2.6984948-	9- 2.6300913-	8- 3.5731277
22.000	5 4.1490314-	5 2.5114410-	9- 7.1227420-	8- 2.8969899
22.250	5 5.3707671-	5 2.0679156-	8- 1.0087541-	8- 2.2719162
22.500	5 6.7058097-	5 1.2949442-	8- 1.1604233-	8- 1.7158552
22.750	5 8.1046231-	4 1.1333482-	8- 1.12034276-	8- 1.2375623
23.000	5 9.4928039-	5 1.5591660	8- 1.1686843-	9- 8.3893806
23.250	6 1.0766271-	5 3.18032229	8- 1.0818210-	9- 5.11702351
23.500	6 1.1786509-	5 6.6914532	9- 9.16342626-	9- 2.16565213
23.750	6 1.2376463-	6 1.0279905	9- 8.2948421-	10- 7.6758168
24.000	6 1.2317428-	6 1.4597205	9- 6.9192754-	10- 5.8609003-
24.250	6 1.1347760-	6 1.9631295	9- 5.5923428-	9- 1.4953447-
24.500	5 9.1639949-	6 2.5313517	9- 4.3703376-	9- 2.0470984-
24.750	5 5.4255958-	6 3.1500324	9- 3.2867351-	9- 2.3208825-
25.000	4 2.3572412	6 3.7952971	9- 2.3573649-	9- 2.3868309-
25.250	5 8.2009074	6 4.4315407	9- 1.5849730-	9- 2.3048068-
25.500	6 1.8841218	6 5.0091806	10- 9.6305870-	9- 2.1243296-
25.750	6 3.2487551	6 5.4625033	10- 4.7904493-	9- 1.8850762-
26.000	6 4.9389852	6 5.17077382	10- 1.1681223-	9- 1.6177724-
26.250	6 6.9665817	6 5.16416985	10- 1.4136194	9- 1.3452742-
26.500	6 9.3237872	6 5.1412317	10- 3.1336530	9- 1.0837478-
26.750	7 1.1975871	6 4.0639161	10- 4.1624256	10- 8.4384231-
27.000	7 1.4852478	6 2.2503824	10- 4.6554206	10- 6.3180769-
27.250	7 1.7838061	5 4.7111996-	10- 4.7494074	10- 4.5049900-
27.500	7 2.0761679	6 4.2774126-	10- 4.5608153	10- 3.0025727-
27.750	7 2.3386409	6 9.3396957-	10- 4.1857345	10- 1.7966028-
28.000	7 2.5399358	7 1.5808821-	10- 3.7009661	11- 8.6133987-
28.250	7 2.6403049	7 2.3796049+	10- 3.1657823	11- 1.6440918-
28.500	7 2.5909155	7 3.3348580-	10- 2.6241196	11- 3.2944119
28.750	7 2.3336469	7 4.4419722-	10- 2.1068900	11- 6.5558725
29.000	7 1.8014745	7 5.6833700-	10- 1.6342900	11- 8.4759849
29.250	6 9.1963375	7 7.0244845-	10- 1.2179949	11- 9.3599778
29.500	6 3.9214517-	7 8.4092691-	11- 8.6312129	11- 9.4755776
29.750	7 2.2160932-	7 9.7553772-	11- 5.6995123	11- 9.10501357
30.000	7 4.6312590-	8 1.0949314-	11- 3.3538558	11- 8.2707412
30.250	7 7.7064528-	8 1.1841730-	11- 1.5414130	11- 7.2865313
30.500	8 1.1491020-	8 1.2243481-	12- 1.9694859	11- 6.2122496
30.750	8 1.6003262-	8 1.1922945-	12- 7.4992199-	11- 5.1325617
31.000	8 2.1216210-	8 1.0605183-	11- 1.3694087-	11- 4.1067178
31.250	8 2.7040889-	7 7.9740455-	11- 1.7278608-	11- 3.1730965
31.500	8 3.3307232-	7 3.6781060-	11- 1.8853947-	11- 2.3534937
31.750	8 3.9742738-	7 2.6584780	11- 1.8945897-	11- 1.6570152
32.000	8 4.5949998-	8 1.1418719	11- 1.7999709-	11- 1.0834354
32.250	8 5.1383813-	8 2.2967931	11- 1.6380826-	12- 6.2604529

Table 10B (continued)

x		F_1		F_2		F_3		F_4
32.500	8	5.5329873-	8	3.76119953	11-	1.4379596-	12-	2.7397739
32.750	8	5.6886338-	8	5.5592914	11-	1.2218671-	13-	1.4050522
33.000	8	5.4951957-	8	7.6953776	11-	1.0061659-	12-	1.6782802-
33.250	8	4.8223751-	9	1.0155116	12-	8.0222907-	12-	2.8563392-
33.500	8	3.5207828-	9	1.2893549	12-	6.1735645-	12-	3.5251740-
33.750	8	1.4249245-	9	1.5826835	12-	4.5561759-	12-	3.8035330-
34.000	8	1.6414299	9	1.8822300	12-	3.1861461-	12-	3.7949437-
34.250	8	5.8568915	9	2.1687757	12-	2.0614776-	12-	3.5868335-
34.500	9	1.1390415	9	2.4160882	12-	1.1677102-	12-	3.2507512-
34.750	9	1.8385046	9	2.5899325	13-	4.8246862-	12-	2.8433625-
35.000	9	2.6936713	9	2.6472298	14-	2.0938264	12-	2.4079626-
35.250	9	3.7067746	9	2.5355397	13-	3.7079396	12-	1.9762154-
35.500	9	4.8694687	9	2.1929923	13-	5.9498546	12-	1.5699976-
35.750	9	6.1590686	9	1.5488940	13-	7.1963749	12-	1.2031950-
36.000	9	7.5342278	8	5.2520165	13-	7.6825877	13-	8.8339338-
36.250	9	8.9302203	8	9.6082772-	13-	7.6128363	13-	6.1337970-
36.500	10	1.0253990	9	2.9925619-	13-	7.1591340	13-	3.9244579-
36.750	10	1.1379122	9	5.6481771-	13-	6.4618494	13-	2.1748900-
37.000	10	1.2141241	9	8.9927942-	13-	5.6318078	14-	8.3899971-
37.250	10	1.2334285	10	1.3068350-	13-	4.7533258	14-	1.3735771
37.500	10	1.1708138	10	1.7880863-	13-	3.8877883	14-	8.1105304
37.750	9	9.9686367	10	2.3385100-	13-	3.0773089	13-	1.2378404
38.000	9	6.7807651	10	2.9466676-	13-	2.3483207	13-	1.4697256
38.250	9	1.7760494	10	3.5921537-	13-	1.7149326	13-	1.5533411
38.500	9	5.4343936-	10	4.2433721-	13-	1.1819000	13-	1.5290907
38.750	10	1.5239960-	10	4.8551839-	14-	7.4720607	13-	1.4308896
39.000	10	2.8002409-	10	5.3665975-	14-	4.0421435	13-	1.2863190
39.250	10	4.4017903-	10	5.6986022-	14-	1.4342508	13-	1.1170855
39.500	10	6.3468119-	10	5.7524648-	15-	4.6157538-	14-	9.3964093
39.750	10	8.6359644-	10	5.4087621-	14-	1.7598763-	14-	7.6589503
40.000	11	1.1245035-	10	4.5274595-	14-	2.5723019-	14-	6.0396223

Table 11B
Values of the First Derivatives of the Four Schleichner Functions (F'_i) Obtained
from Their Asymptotic Expansion Definition

x	F'_1	F'_2	F'_3	F'_4
10.000	1 5.6501688	2 1.3737144-	5- 8.2499197-	4- 1.97777949
10.250	1 3.7086536	2 1.7111127-	5- 9.6006860-	4- 1.4913977
10.500	7.5665567	2 2.0629821-	5- 9.9962723-	4- 1.0757473
10.750	1 3.4002802-	2 2.4108702-	5- 9.7162643-	5- 7.3142835
11.000	1 8.9505590-	2 2.7292976-	5- 8.9889517-	5- 4.5492002
11.250	2 1.6061091-	2 2.9847231-	5- 7.9950949-	5- 2.4009044
11.500	2 2.4857163-	2 3.1346540-	5- 6.8730712-	6- 7.9357672
11.750	2 3.5397136-	2 3.1270234-	5- 5.7247027-	6- 3.5437553-
12.000	2 4.7641655-	2 2.8999832-	5- 4.6212264-	5- 1.1240397-
12.250	2 6.1417329-	2 2.3822988-	5- 3.6090433-	5- 1.5917304-
12.500	2 7.6375178-	2 1.4945556-	5- 2.7150018-	5- 1.8263272-
12.750	2 9.1944631-	1 1.5142259-	5- 1.9510792-	5- 1.8878562-
13.000	3 1.0728457-	2 1.7347573	5- 1.3183981-	5- 1.8269987-
13.250	3 1.2123359-	2 4.2487716	6- 8.1056840-	5- 1.6852607-
13.500	3 1.3226270-	2 7.4654486	6- 4.1638972-	5- 1.4955887-
13.750	3 1.3843476-	3 1.1440409	6- 1.2196500-	5- 1.2832555-
14.000	3 1.3737624-	3 1.6198437	7- 8.7700435	5- 1.0668852-
14.250	3 1.2626820-	3 2.1719315	6- 2.2754134	6- 8.5951824-
14.500	3 1.0186544-	3 2.7921170	6- 3.1163965	6- 6.6964339-
14.750	2 6.0552451-	3 3.4641285	6- 3.5272654	6- 5.0215932-
15.000	1 1.5508014	3 4.1614983	6- 3.6191249	6- 3.5922514-
15.250	2 8.8422085	3 4.8453256	6- 3.4858779	6- 2.4099512-
15.500	3 2.0389589	3 5.4619766	6- 3.2045038	6- 1.4623607-
15.750	3 3.5133402	3 5.9409256	6- 2.8361386	7- 7.2823934-
16.000	3 5.3319809	3 6.1929304	6- 2.4276759	7- 1.8135552-
16.250	3 7.5050908	3 6.1087309	6- 2.0136622	7- 2.0653987
16.500	4 1.0021917	3 5.5587003	6- 1.6182499	7- 4.6356311
16.750	4 1.2843049	3 4.3937966	6- 1.2571067	7- 6.1621550
17.000	4 1.5891529	3 2.4482164	7- 9.3920654	7- 6.8845268
17.250	4 1.9043103	2 4.5560671-	7- 6.6841010	7- 7.0117751
17.500	4 2.2115913	3 4.4991713-	7- 4.4483724	7- 6.7205282
17.750	4 2.4859900	3 9.8566150-	7- 2.6602066	7- 6.1555256
18.000	4 2.6946960	4 1.6679329-	7- 1.2783586	7- 5.4316368
18.250	4 2.7962503	4 2.5075911-	8- 2.5236098	7- 4.6368951
18.500	4 2.7399914	4 3.5087119-	8- 4.7190942-	7- 3.8360132
18.750	4 2.4659005	4 4.6655215-	8- 9.4818151-	7- 3.0741128
19.000	4 1.9050825	4 5.9588007-	7- 1.2270197-	7- 2.3803182
19.250	3 9.8106862	4 7.3517987-	7- 1.3540685-	7- 1.7711114
19.500	3 3.8782628-	4 8.7856748-	7- 1.3691151-	7- 1.2533515
19.750	4 2.2847837-	5 1.0174707-	7- 1.3057483-	8- 8.2685991
20.000	4 4.7891578-	5 1.1401486-	7- 1.1914527-	8- 4.8659438
20.250	4 7.9692322-	5 1.2312316-	7- 1.0480143-	8- 2.2442140
20.500	5 1.1872815-	5 1.2713427-	8- 8.9209625-	9- 3.0501041
20.750	5 1.6515445-	5 1.2368461-	8- 7.3591864-	8- 1.0565893-
21.000	5 2.1866144-	5 1.0998041-	8- 5.8796323-	8- 1.9443795-

Table 11B (continued)

χ^2	F_1^*	F_2^*	F_3^*	F_4^*
21.250	2.7830531-	4	8.2821101-	8- 4.5366993-
21.500	3.4231685-	4	3.8662972-	8- 3.3607566-
21.750	4.0789186-	4	2.6267061	8- 2.3638781-
22.000	4.7096652-	5	1.1579513	8- 1.5448273-
22.250	5.2599430-	5	2.3354687	9- 8.9319047-
22.500	5.6573873-	5	3.8260597	9- 3.9274962-
22.750	5.8109738-	5	5.6506941	10- 2.4136902-
23.000	5.6099291-	5	7.8149228	9- 2.3316581
23.250	4.9236183-	6	1.0302188	9- 3.9937208
23.500	3.6027480-	6	1.3065892	9- 4.9340081
24.000	1.6120451	6	1.9031520	9- 5.3070948
24.250	5.8573435	6	2.1905500	9- 5.0117519
24.500	1.1419436	6	2.4379282	9- 4.5378126
24.750	1.8437617	6	2.6110568	9- 3.9651844
25.000	2.7003486	6	2.6670121	9- 3.3546530
25.250	3.7134642	6	2.5536807	9- 2.7504897
25.500	4.8743009	6	2.2097502	9- 2.1831132
25.750	6.1597899	6	1.5653564	9- 1.6716861
26.000	7.5283703	5	5.4359048	9- 1.2265366
26.250	8.9154004	5	9.3683378-	10- 8.5129450
26.500	1.0228313	6	2.9575132-	10- 5.4474266
26.750	1.1341842	6	5.5945965-	10- 3.0235868
27.000	1.2093549	6	8.9110273-	10- 1.1756755
27.250	1.2280282	7	1.2946546-	11- 1.7282915-
27.500	1.1656136	7	1.7705312-	10- 1.1018438-
27.750	9.9325263	7	2.3140851-	10- 1.6893712-
28.000	6.7815328	7	2.9138583-	10- 2.0079189-
28.250	1.8434270	7	3.5496122-	10- 2.1222913-
28.500	5.2604674-	7	4.1901547-	10- 2.0884829-
28.750	1.4908111-	7	4.7910862-	10- 1.9533664-
29.000	2.7449146-	7	5.2925843-	10- 1.7549602-
29.250	4.3167814-	7	5.6173399-	10- 1.5231028-
29.500	6.2235397-	7	5.6689627-	10- 1.2803434-
29.750	8.4651079-	7	5.3310788-	10- 1.0429576-
30.000	1.1017129-	7	4.4675391-	11- 8.2198314-
30.250	1.3822652-	7	2.9240821-	11- 6.2422994-
30.500	1.6782827-	6	5.3207038-	11- 4.5319875-
30.750	1.9746810-	7	2.8852195	11- 3.0989942-
31.000	2.2501122-	7	7.5031289	11- 1.9355698-
31.250	2.4759297-	8	1.3482294	11- 1.0219359-
31.500	2.6152584-	8	2.0950956	12- 3.3099596-
31.750	2.6222532-	8	2.9982187	12- 1.6799058
32.000	2.4417302-	8	4.0565809	12- 5.0666710
32.250	2.0093062-	8	5.2574622	12- 7.1561840
31.250	3.4655001-	11-	3.4655001-	11-
2.9973468-	11-	2.9973468-	11-	2.9973468-
2.5113639-	11-	2.5113639-	11-	2.5113639-
2.0388761-	11-	2.0388761-	11-	2.0388761-
1.6009802-	11-	1.6009802-	11-	1.6009802-

Table 11B (continued)

x	F_1'	F_2'	F_3'	F_4'
32.500	8 1.2522805-	8 6.5725453	12- 8.2305972	11- 1.2105223-
32.750	6 9.1458890-	8 7.9534842	12- 8.54405530	12- 8.7392573-
33.000	8 1.5557634	8 9.3271438	12- 8.3013906	12- 5.9279439-
33.250	8 3.7708171	9 1.0590686	12- 7.6923530	12- 3.6528792-
33.500	8 6.6275466	9 1.1606686	12- 6.8580437	12- 1.87226948-
33.750	9 1.0183688	9 1.2198836	12- 5.9112069	13- 5.3219888-
34.000	9 1.4470042	9 1.2148709	12- 4.9363759	13- 4.3048487
34.250	9 1.9477008	9 1.1194112	12- 3.9939591	12- 1.0785894
34.500	9 2.5138564	8 9.0300838	12- 3.61243240	12- 1.4729324
34.750	9 3.1313778	8 5.3133975	12- 2.3517178	12- 1.6694041
35.000	9 3.7765874	7 3.2839043-	12- 1.6878811	12- 1.7174922
35.250	9 4.4139828	8 8.2818814-	12- 1.1352044	12- 1.6595863
35.500	9 4.9939141	9 1.8925546-	13- 6.8943770	12- 1.5308742
35.750	9 5.4503527	9 3.2598857-	13- 3.64192677	12- 1.3596479
36.000	9 5.6988772	9 4.9561300-	14- 8.1412469	12- 1.1678944
36.250	9 5.6352115	9 6.9940272-	13- 1.0458387-	13- 9.7203377
36.500	9 5.1346049	9 9.3667267-	13- 2.28722614-	13- 7.8372831
36.750	9 4.0523899	10 1.2040119-	13- 3.0313380-	13- 6.1070970
37.000	9 2.2262884	10 1.4944020-	13- 3.3890271-	13- 4.6575519
37.250	8 5.1906202-	10 1.7962376-	13- 3.4582354-	13- 3.2639823
37.500	9 4.3647759-	10 2.0922583-	13- 3.3225825-	13- 2.1755803
37.750	9 9.4868722-	10 2.3584654-	13- 3.0512713-	13- 1.3007007
38.000	10 1.6041361-	10 2.5630811-	13- 2.6997664-	14- 6.2126050
38.250	10 2.4144506-	10 2.6656219-	13- 2.3110185-	14- 1.1426246
38.500	10 3.3847868-	10 2.61622475-	13- 1.9169599-	14- 2.4550086-
38.750	10 4.5107614-	10 2.3555054-	13- 1.5401462-	14- 4.8343725-
39.000	10 5.7748268-	10 1.8146881-	13- 1.1953876-	14- 6.2374219-
39.250	10 7.1420561-	9 9.1698442-	14- 8.9131558-	14- 6.8848187-
39.500	10 8.5554807-	9 4.2026684	14- 6.3178816-	14- 6.9706478-
39.750	10 9.9311214-	10 2.2819765	14- 4.1712752-	14- 6.6601162-
40.000	11 1.1152838-	10 4.7500431	14- 2.4517657-	14- 6.0895500-

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