REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the revised indexing system printed in Volume 28, Number 128, October 1974, pages 1191–1194.

1[2.30, 7.50].–T. S. Chihara, *An Introduction to Orthogonal Polynomials*, Gordon and Breach Science Publishers, New York, London, Paris, 1978, xii + 249 pp., $23\frac{1}{2}$ cm. Price \$39.50.

Written at the beginning graduate level, this text covers selected aspects of orthogonal polynomials, the emphasis being on spectral properties that can be derived directly from the recurrence formula. Of the six chapters, the first four develop the subject in an orderly deductive fashion, while the last two essentially report on a large number of assorted facts without proofs.

Orthogonal polynomials are defined with respect to a linear functional $\mathcal{L}$ acting on the vector space of all polynomials. Thus, $\{P_n(x)\}_{n=0}^{\infty}$ is a sequence of orthogonal polynomials if each P_n has exact degree n, $\mathcal{L}(P_n P_m) = 0$ whenever $n \neq m$, and $\mathcal{L}(P_n^2) \neq 0$ for all $n \geqslant 0$. The functional is positive-definite if $\mathcal{L}(\pi) > 0$ for every polynomial $\pi \not\equiv 0$ which is nonnegative on the real line. Chapter I develops elementary properties of orthogonal polynomials, including existence criteria, the recurrence formula, basic facts on zeros, Gaussian quadrature, and kernel polynomials. Chapter II begins with the characterization of positive-definite functionals $\mathcal{L}$ in terms of the Stieltjes integral representation $\mathcal{L}(\pi) = \int_{-\infty}^{\infty} \pi(x)\, d\psi(x)$, where ψ is bounded nondecreasing and has an infinite spectrum (i.e., infinitely many points of increase). $\mathcal{L}$ is called determined, if ψ is essentially unique. While the author proves that functionals having a bounded supporting set are determined, he considers the general theory of determinacy as being outside the scope of this text. Likewise, there is only a brief introduction into the moment problems of Stieltjes and Hamburger. Chapter III, largely preparatory for the material in Chapter IV, deals with elementary properties of continued fractions and the connection between continued fractions and orthogonal polynomials. It also contains a rather detailed treatment of H. S. Wall's theory of chain sequences, i.e. numerical sequences $\{a_n\}_{n=1}^{\infty}$ in which each a_n, $n \geqslant 1$, admits a representation $a_n = (1 - g_{n-1})g_n$ with $0 \leqslant g_0 < 1$, $0 < g_n < 1$. The general theme of Chapter IV is the problem of extracting properties of orthogonal polynomials from the behavior of the coefficients in the recurrence formula. The properties in question concern boundedness and unboundedness of the true interval of orthogonality and structural properties of the spectrum of the underlying distribution ψ. The chapter culminates in Krein's theorem characterizing the case in which the spectrum is a bounded set with finitely many limit points.

Chapter V begins with a quick introduction into the "classical orthogonal polynomials" and their formal properties. Several unifying principles are then

0025-5718/81/0000-0032/\$03.50

discussed of characterizing classical orthogonal polynomials in terms of differential equations, differentiation properties, or Rodrigues type formulas. Suitably generalized, these principles yield more general classes of orthogonal polynomials, including those of Hahn and Meixner. A large number of specific orthogonal polynomials, often with unusual, but interesting (discrete and continuous) weight distributions, are reviewed in Chapter VI. The book concludes with historical notes and an appendix. The appendix contains a table of recurrence formulae for all explicitly known (monic) positive-definite systems of orthogonal polynomials, treated or mentioned in the book.

While the text proper (Chapters I–IV) rarely gets down to specific cases, one finds many examples in the exercises. These, therefore, extend and illustrate the text in an essential way.

The author has deliberately chosen to omit many important subject areas related to orthogonal polynomials. Among these are (i) inequalities and asymptotic properties of orthogonal polynomials and their zeros, and of Christoffel numbers and Christoffel functions, (ii) integral representations, (iii) the deeper aspects of the moment problem, in particular, questions of determinacy and their interplay with closure properties and approximation theory, (iv) expansion theorems and summability theory, (v) the theory of polynomials orthogonal on the circle and on arbitrary curves, (vi) convergence of interpolation and quadrature processes based on the zeros of orthogonal polynomials. The rationale for these omissions, in the author's own (modest) words, is " . . . the fact that existing books contain better treatments of these topics than we could provide anyway." The book by Szegö [6] (and the appendix by Geronimus [4] to the Russian translation of the 1959 edition of Szegö's book), as well as the book by Freud [3] (and the recent memoir of Nevai [5]), indeed cover many of these topics in great depth. For questions of positivity that arise in connection with sums of orthogonal polynomials, expansion coefficients for one system of polynomials in terms of another, and integrals of orthogonal polynomials, as well as for addition theorems, the best source is the set of lectures by Askey [1]. Additional topics not covered in the book are applications of orthogonal polynomials in the physical and social sciences, computational considerations, and orthogonal polynomials in several variables.

The limited material covered, however, is presented in a well-organized and pleasing manner. A great deal of information, in part not previously available in book form, is packed into the relatively short span of 250 pages.

With regard to the history of orthogonal polynomials, the reviewer takes this opportunity to draw attention to an important paper of Christoffel [2] which has been consistently overlooked in all books on the subject, including the one under review. Christoffel appears to be one of the first, if not the first, to introduce orthogonal polynomials with respect to an arbitrary weight function (on a finite interval) and to initiate their systematic study.

W. G.

1. Richard Askey, *Orthogonal Polynomials and Special Functions*, Regional Conference Series in Appl. Math., No. 21, SIAM, Philadelphia, Pa., 1975.

2. E. B. Christoffel, "Sur une classe particulière de fonctions entières et de fractions continues," *Ann. Mat. Pura Appl.* (2), v. 8, 1877, pp. 1–10. [Also in: Ges. Math. Abhandlungen II, pp. 42–50.]

3. GÉZA FREUD, *Orthogonale Polynome*, Birkhäuser, Basel, 1969; English transl., Pergamon Press, New York, 1971.

4. JA. L. GERONIMUS & G. SZEGÖ, *Orthogonal Polynomials*, Amer. Math. Soc. Transl. (2), vol. 108, Amer. Math. Soc., Providence, R. I., 1977, pp. 37–130.

5. PAUL G. NEVAI, *Orthogonal Polynomials*, Mem. Amer. Math. Soc., Vol. 18, No. 213, Amer. Math. Soc., Providence, R. I., 1979.

6. GABOR SZEGÖ, *Orthogonal Polynomials*, 4th ed., Amer. Math. Soc. Colloq. Publ., Vol. 23, Amer. Math. Soc., Providence, R. I., 1975.

2[9.00].–PAULO RIBENBOIM, 13 *Lectures on Fermat's Last Theorem*, Springer-Verlag, New York, xi + 302 pp., 24 cm. Price $24.00.

This book will surely become one of the classics on Fermat's Last Theorem. In a very readable style, the author summarizes most of the important work relating to FLT and tries to give the main ideas that go into the proofs. The research has been rather thorough, and each chapter concludes with a long list of references. Starting with the early work on degrees up to seven, and also the results obtained by "elementary" methods, the author then proceeds to Kummer's work. He then treats more recent work, for example that of Wieferich, Mirimanoff, Vandiver, and Krasner. Next, the reader is treated to a discussion of applications of class field theory, linear forms in logarithms, elliptic curves, and congruences. Also included is a discussion of topics that have appeared in this journal, such as the tables of W. Johnson and S. Wagstaff and recent conjectures concerning the distribution of irregular primes and of the index of irregularity. The book concludes with a sometimes light-hearted treatment of variations of FLT: polynomials, differential equations, nonassociative arithmetics, etc. Because of a lack of space, and to enhance readability, proofs are often omitted or only sketched. But the interested reader can always consult the references, or wait for the promised second, more technical volume to be published. Most of the text should be accessible to a mathematician with an undergraduate course in number theory, if certain sections involving algebraic number theory are omitted. Though writing on a subject notorious for its errors, the author seems to be fairly accurate. However, we note two minor mistakes: on page 82 and 98 the words "positive real unit" should be replaced by "real unit" since positivity will vary with the embedding into the reals; on page 208 the formula for the genus should have a 4 instead of a 5.

L. WASHINGTON

Department of Mathematics
University of Maryland
College Park, Maryland 20742

3[10.35].–BERNARD CARRÉ, *Graphs and Networks*, Clarendon Press, Oxford, 1979, x + 277 pp., 23cm. Price $36.50 (cloth), $19.50 (ppr.).

This book is a rather unusual entry into the literature on graphs and networks. Its motivation comes from operations research and computer science; thus, its applications include, for instance, critical path analysis, dynamic programming and assigning memory space when compiling a computer program. Its viewpoint is algorithmic and algebraic.

The algorithmic perspective is religiously followed, and a good deal of attention is paid to data structures for implementation. It is surprising, however, that analysis of time complexity is omitted for several algorithms. A good, though somewhat brief, introduction to easy (polynomially bounded) and hard (NP-complete or NP-hard) problems is included. The algorithmic style is pursued almost to the exclusion of theorems; the latter are merely stated in italics, with no separate numbering. While theorems scare some students, the style of this book may confuse more.

While theorems have only a small part, there is a good deal of mathematical abstraction and notation present. The book starts with an initial chapter of thirty pages on algebraic foundations, introducing binary operations and relations, orderings, and lattices. For such an intuitive subject as graph theory, it is unfortunate that graphs delay their appearance for so long. When they appear, they are "Berge" graphs; that is, all graphs are directed, while some (simple graphs) are directed both ways. The second chapter also introduces algorithms, for finding strong components, traversing trees, and determining Hamiltonian cycles, for instance. Eulerian circuits, however, are confined to an exercise.

The third chapter is the most original and interesting. The author defines "path algebras", with applications to listing paths or elementary paths and finding shortest or most reliable paths. He then demonstrates that such path problems can be expressed as linear equations over the appropriate path algebra. Methods of numerical linear algebra are then modified to solve these equations, leading to a synthesis of several well-known path algorithms.

Chapters four, five, and six are devoted respectively to connectivity, independent sets, covers and colorations, and network flow problems. Again, the emphasis is on algorithms. There is, for instance, no discussion of planarity or the 4-color theorem.

Each chapter concludes with additional notes and references that appear to be quite useful.

The book is intended for advanced undergraduate or beginning graduate courses. It is most accessible to students with some background in modern algebra and provides a fairly comprehensive description of algorithms for graph and network problems. To this reviewer, it seems that those students familiar with abstract algebra will be interested in more mathematical development, while those more interested in algorithms will be less inclined to the algebraic approach.

M. J. Todd

School of Operations Research and Industrial Engineering
Cornell University
Ithaca, New York 14853

4[2.00].–Irving Allen Dodes, *Numerical Analysis for Computer Science*, North-Holland, New York, 1978, ix + 618 pp., 26 cm. Price \$19.95.

Since the present text covers typical subject matter to be found in many numerical analysis texts, the reviewer must try to discover features of the book which explain its title. The computer science curriculum (cf. *Comm. ACM*, March, 1979) lists two courses in numerical analysis as electives only. Although this text was developed for a full year course, the author suggests material to select from it for a one-term course. In either case, there would seem to be a limited market for the book among computer scientists.

Since computer scientists in the standard professional curriculum are required to have little mathematics beyond calculus and some acquaintance with linear algebra and since experience shows that many computer science majors are not too adept at these subjects, the author is no doubt well advised in explaining each mathematical concept without presuming too much retention from previous courses. The development of each mathematical concept is done in detail and explicitly.

In addition every opportunity is taken to explain as much mathematics as possible beyond the calculus level. Such topics include Taylor series in n-variables, Fourier series, summation by parts, and the Riemann zeta function. In the teacher's manual which accompanies the book, this tendency is even more in evidence. Fifteen topics in advanced mathematics are surveyed, including the integration of complex functions. In the text itself, matrix inversion, determinants, Cramer's rule, and eigenvalues are discussed in wholly self-contained expositions. One senses a laudable zeal on the author's part to repair the mathematical deficiencies in the computer science curriculum.

The chapters are: Introduction to Error Analysis, The Solution of an Equation, Systems of Linear Equations, Non-Linear Systems, Classical Interpolation Theory, Summation by Formula, The Taylor Series, Series of Powers and Fractions, The Fourier Series, The Chebyshev Criterion, Integration by Computer, First-Order Ordinary Differential Equations, Second-Order Ordinary Differential Equations.

A particularly useful and clear presentation is given of the Hastings procedures for finding polynomial and rational approximations to functions. At the end of the discussion of eigenvalues, two substantially different fourth-order characteristic equations are obtained by the Householder and Givens reductions, respectively, applied to the same tridiagonal matrix. Since the roots of the two polynomials are not obtained, the reader can only conjecture that the author wished to present an unsolved problem as an example. Although multiple precision is advised, the reader is left in suspense as to whether this was tried.

In the last section of the book a tridiagonal matrix is obtained in approximating a boundary value problem for a second order ordinary differential equation. This would have seemed to be the place to present the Gaussian elimination algorithm for a tridiagonal system, which is essential in presenting ADI procedures. However it is not stated in the text and the reader cannot puzzle out the method used to solve the system from the computer program since the program illustrating the Numerov method in the previous section is simply repeated.

Such topics of current interest as the Fast Fourier Transform, spline approximation, collocation methods, and stiff systems of ordinary differential equations are not included. Nor is any awareness shown of the availability of mathematical subroutine packages.

On page 442 the author apologizes for mentioning that Simpson's rule integrates a third-degree polynomial exactly and says "it would be senseless to use Simpson's rule to integrate a third-degree polynomial." May not the next generation come to feel that it is pointless to teach any integration techniques except numerical?

On page 451, an example is given of Richardson extrapolation applied to Simpson's rule. When a good answer is not achieved the author concludes that "we do not recommend this procedure." Later he praises Romberg integration as not being a Richardson extrapolation, contrary to the thinking of other authors.

On page 529, the author suggests that the simplest types of second-order ordinary differential equations are the most common in practice. It is true that simple types occur frequently in textbooks. One fears that the future computer scientist will be misled by such a remark since he will have no way of knowing that problems of weather prediction, modelling of oil reservoir behavior, and of nuclear reactors, which have been significant computer challenges, have not involved particularly simple types of equations.

However it is all too likely that such challenging problems will not be attempted by graduates of the standard computer science program unless they learn the necessary science and mathematics. To do this they must complete a different degree.

A. GARDER

Department of Mathematics
Southern Illinois University
Edwardsville, Illinois 62025

5[7.95, 7.100].–I. S. GRADSHTEYN AND I. M. RYZHIK, *Table of Integrals, Series and Products*, Academic Press, New York, 1980, xlv + 1248 pp., 23 cm. Price $19.50. (Corrected and enlarged edition prepared by: Allan Jeffrey, incorporating the fourth edition prepared by: Yu. V. Geronimus and M. Yu. Tseytlin, translated from the Russian by Scripta Technica, Inc., and edited by Allan Jeffrey.)

The history of this work dates back to the 1943 tables (in Russian) by I. M. Ryzhik. It was reviewed in [1] and reviews of subsequent editions and notices of errata are covered in [2]–[17]. In 1957 there appeared a translation of the Russian third edition into parallel German and English text. It is an improved and expanded version of the 1943 edition and is authored by I. S. Gradshteyn and I. M. Ryzhik. This item was reviewed in [2] and errata are noted in [2]–[5], [10]. In 1965, the immediate forerunner of the present volume appeared. It represents an expanded version of the third edition with many new sections added. This was reviewed in [6] and errata notices are given in [7]–[9], [11]–[17].

The first 1080 pages of the 1965 and present editions are identical except for corrected errata and for some new errata introduced in place of the old errata. Yet much of the 1965 errata remains. Indeed two errata noted in [3] are in the 1965 and 1980 editions. Pages xxiii–xlv are also the same in both editions. Pages i–xxii are slightly different owing principally to the table of contents which describes the 73 pages of new material, (pp. 1081–1153) in the present edition. The list of bibliographic references used in preparation of text is slightly enlarged, but the classified supplementary references are the same. The bibliographies are seriously deficient in view of a large amount of significant material which has appeared in the last fifteen years.

On p. ix of the present edition there is an acknowledgement to 74 workers who supplied the editor with corrections. It is incredible but true that not a single worker who reported errata in the various issues of *Mathematics of Computation* is mentioned, and as noted above many errors in the 1965 edition still remain in the 1980 edition. A list of all errata known to me is appended to this review.

The reviewer of the 1965 edition [6] noted a number of textual errors which might be attributed to translation difficulties. These same criticisms apply to the present edition as no changes have been made. Along this same line, I would add that use of the words 'degenerate hypergeometric function' to describe the confluent hypergeometric function, pp. 1057–1068, Section 9.2, in both the 1965 and 1980 editions is ridiculous. Also the definition given in 9.201 is incorrect.

The photographic work done to produce the present volume is excellent.

Since a general description of the first 1080 pages is provided in previous reviews [1], [2], [6], it is sufficient to consider only the 73 pages of new material which is divided into eight chapters as follows. Chapter 10–Vector Field Theory, pp. 1081–1091; Chapter 11–Algebraic Inequalities, pp. 1093–1096; Chapter 12–Integral Inequalities, pp. 1097–1101; Chapter 13–Matrices and Related Results, pp. 1103–1107; Chapter 14–Determinants, pp. 1108–1111; Chapter 15–Norms, pp. 1114–1124; Chapter 16–Ordinary Differential Equations, pp. 1126–1140; and Chapter 17–Fourier and Laplace Transforms, pp. 1142–1153. The chapter titles are indicative of the material contained therein. For instance, Chapter 10 defines the various properties of vectors in three dimensions such as dot and cross product and their derivatives. The operators grad, div, and curl are defined and their properties are delineated. There are sections on orthogonal curvilinear coordinates and vector integral theorems. Chapter 11 lists inequalities of the kind like Cauchy-Schwarz (on p. 1093 the name Buniakowski is also attached), Minkowski and Hölder are given. Mean value theorems and integral inequalities analogous to the inequalities in Chapter 11 are noted. Chapters 13–17 are self-explanatory. I do not see the point of any of this added material. It is woefully inadequate and there are other thorough and well informed sources, sources not listed in the bibliography. An attempt to cover a subject like Ordinary Differential Equations in 15 pages is preposterous. Similar remarks pertain to Chapter 17. I have not made a thorough check, but I would suppose that all of the entries in Chapter 17 will be found elsewhere in the volume. On p. 1142, the definition of the Laplace transform is defective in that nothing is said about restricting the growth properties of the function $f(x)$.

The tome contains a wealth of valuable and useful information, but the editing and attention given to errata is not of the quality the volume merits.

Y. L.

1. *Math. Comp.*, v. 1, 1945, pp. 442–443.
2. *Math. Comp.*, v. 14, 1960, pp. 381–382.
3. *Math. Comp.*, v. 14, 1960, pp. 401–403.
4. *Math. Comp.*, v. 17, 1963, p. 102.
5. *Math. Comp.*, v. 20, 1966, p. 468.
6. *Math. Comp.*, v. 20, 1966, pp. 616–619.
7. *Math. Comp.*, v. 21, 1967, pp. 293–294.
8. *Math. Comp.*, v. 22, 1968, pp. 903–907.

9. *Math. Comp.*, v. 23, 1969, pp. 468–469, 891–892.
10. *Math. Comp.*, v. 24, 1970, p. 241.
11. *Math. Comp.*, v. 25, 1971, p. 200.
12. *Math. Comp.*, v. 26, 1972, pp. 305, 599.
13. *Math. Comp.*, v. 27, 1973, pp. 451–452.
14. *Math. Comp.*, v. 30, 1976, p. 899.
15. *Math. Comp.*, v. 31, 1977, p. 614.
16. *Math. Comp.*, v. 32, 1978, p. 318.
17. *Math. Comp.*, v. 33, 1979, p. 433.
18. R. G. Medhurst & J. H. Roberts, "Evaluation of the integral $I_n(b) = (2/\pi)\int_0^\infty(\sin x/x)^n \cdot \cos bx\, dx$," *Math. Comp.*, v. 19, 1965, pp. 113–117.
19. R. Thompson, "Evaluation of $I_n(b) = (2/\pi)\int_0^\infty(\sin x/x)^n \cos bx\, dx$ and of similar integrals," *Math. Comp.*, v. 20, 1966, pp. 330–332, 625. See also *Math. Comp.*, v. 23, 1969, p. 219.
20. H. E. Fettis, "More on the integral $I_n(b) = (2/\pi)\int_0^\infty(\sin x/x)^n \cos bx\, dx$," *Math. Comp.*, v. 21, 1967, pp. 727–730.
21. W. Sollfrey, "On a Bessel function integral," *SIAM Rev.*, v. 9, 1967, pp. 586–589.

Errata

Page	*Formula*	
2	0.131	*For* $A_4 = 19/80$ *read* $A_4 = 19/120$.
27	1.331.2	Delete coefficient sh x in first equation.
32	1.361.3	Multiply right side by 1/2.
36	1.414.2	*For* $-n^2 \sum_{k=1}^\infty$ *read* $-n \sum_{k=1}^\infty$.
37	1.434	The left side should read $\cos^2 x$.
38	1.442.4	Right side should read $$\frac{\pi}{4}[0 < x < \pi/2], \quad -\frac{\pi}{4}[\pi/2 < x < \pi].$$
38	1.443.1	Delete $(-1)^k$.
39	1.444.6	*For* $k = 1$ *read* $k = 0$.
294	3.248.1	Right side should read $$\frac{1}{\nu}B\left(\frac{\mu}{\nu}, \frac{1}{2} - \frac{\mu}{\nu}\right)[\operatorname{Re}\nu > \operatorname{Re} 2\mu > 0].$$
326	3.411.19 3.411.20	In each formula the definition for $\binom{n}{k}$ should read $\binom{n}{k} = n!/k!(n-k)!$.
354	3.531.1	*For* 1.171 953 619 4 *read* 1.171 953 619 3.
458	3.836.5	This formula should read

$$I_n(b) = (2/\pi)\int_0^\infty\left(\frac{\sin x}{x}\right)^n \cos bx\, dx$$

$$= n(2^{n-1}n!)^{-1}\sum_{k=0}^{[r]}(-1)^k\binom{n}{k}(n-b-2k)^{n-1},$$

where

$$0 \leqslant b < n, \quad n \geqslant 1, \quad r = (n-b)/2,$$

and $[r]$ is the largest integer contained in r. The integral vanishes for $b \geqslant n$. For convenience, we have introduced a slight and obvious change in the notation used in the

Page	Formula	
		reference under review. The remark in the square bracket following the formula given there is not clear. The point is that in the above representation b can be replaced by $-b$. Then the left side remains the same. In the right side $n - b - 2k$ becomes $n + b - 2k$ and r becomes $(n + b)/2$. The parameter b is now taken as positive and $0 \leqslant b < n$ as before. On this same page formula 3.836.5 gives a representation for $$M_n(b) = (2/\pi)\int_0^\infty \left(\frac{\sin x}{x}\right)^n \frac{\sin bx}{x}\,dx = \int_0^b I_n(t)\,dt.$$ Thus the correct formula for $I_n(b)$ could easily have been found by differentiating $M_n(b)$ with respect to b. For further discussion on the evaluation of $I_n(b)$, see Medhurst and Roberts [18], Thompson [19], Fettis [20] and the references given in these sources.
516	4.117.5	*For* $+\text{sh}\, a$ *read* $-\text{ch}\, a$.
527	4.224.11	The formulae are incorrect for the cases $a^2 < 1$ and $a^2 > 1$. If $a > 0$, the integrals can be expressed as $\pi \ln(a/2) + 4G + 4S(b)$, where G is Catalan's constant, $$b = (1 - a)/(1 + a) \quad \text{and}$$ $$S(b) = \sum_{k=1}^{\infty} \frac{b^k}{k} \sum_{n=1}^{k} \frac{(-1)^{n+1}}{2n-1}.$$ For alternative representations, see the concluding editorial note in [13].
527	4.224.13	*For* $2^k k!$ *read* $2^{2k}(k!)^2$.
578	4.358.3	The right side should read $$\Gamma(\nu)\mu^{-\nu}\left[\{\psi(\nu) - \ln\mu\}^3 + 3\zeta(2,\nu)\{\psi(\nu) - \ln\mu\} - 2\zeta(3,\nu)\right].$$

654 The right sides of the following equations should read as indicated.

654	6.324.1	$(1 + \sin p^2 - \cos p^2)/4p$
654	6.324.2	$(1 - \sin p^2 - \cos p^2)/4p$
654	6.326.1	$(\pi/8)^{1/2}[S(p) + C(p) - 1] - (1 + \sin p^2 - \cos p^2)/4p$
654	6.326.2	$(\pi/8)^{1/2}[S(p) - C(p)] - (1 - \sin p^2 - \cos p^2)/4p$
722	6.646.3	The correct form of this formula is $$\int_b^\infty e^{-pt}\left(\frac{t-b}{t+b}\right)^{\nu/2} K_\nu\left[a(t^2 - b^2)^{1/2}\right] dt = \frac{\Gamma(\nu+1)}{2sa^\nu}\left[x^\nu e^{-bs}\Gamma(-\nu, bx) - y^\nu e^{bs}\Gamma(-\nu, by)\right],$$ where $x = p - s$, $y = p + s$, $s = (p^2 - a^2)^{1/2}$, $\text{Re}(p + a) > 0$, $\lvert\text{Re}(\nu)\rvert < 1$. For the derivation of this formula, see W. Sollfrey [21].
722	6.647.3	Insert the factor $e^{-(a/2)\sinh t}$ on the right side.

Page	*Formula*	
722	6.648	*For* $\left(\frac{\alpha + \beta e^x}{\alpha e^x + \beta}\right)$ *read* $\left(\frac{\alpha + \beta e^x}{\alpha e^x + \beta}\right)^\nu$.
739	6.691.13	*For* $\pi/2$ *read* $\pi^2/4$.
837	7.374.7	*For* L_n^{n-m} *read* L_m^{n-m}.
841	7.388.6	*For* b^{2m} *read* b^{2m+1}.
841	7.391.3	*For* $\Gamma(\alpha + n + 1)$ *read* $\Gamma(\alpha + 1)$.
842	7.391.9	*For* $\Gamma(\sigma - \beta + m + 1)$ *read* $\Gamma(\sigma - \beta + m - n + 1)$.
843	7.411.1	*For* $L_{n+1}(t)$ *read* $L_{n+1}(t)/(n + 1)$.
843	7.411.5	*For* $L_k(x)$ *read* $L_k(x)/k!$.
920	8.174	*For* m (in two places) *read* n.
943	8.362.2	*For* z (in two places) *read* x.
947	8.373.2	*For* $1/2 \sin \pi x$ *read* $\pi/2 \sin \pi x$ and add ln 2 to the right side.
948	8.375.1	*For* $p = 1, 2, 3, \ldots,$ *read* $p = 1, 2, 3, \ldots, q - 1$.
960	8.442	Add the comment: Omit the term containing the sum over m when $k = 1$.
961	8.446	Omit the term $\Sigma_{k=1}^{l} 1/k$ when $l = 0$.
976	8.521.4	*For* $+1/\sqrt{(2ki\pi - z)^2 + x^2 + y^2}$ *read* $-1/\sqrt{(2ki\pi - z)^2 + x^2 + y^2}$.
1005	8.732.2	*For* $(\nu + \mu)zQ_{\nu-1}^{\mu}(z)$ *read* $(\nu + \mu)Q_{\nu-1}^{\mu}(z)$.
1008	8.751.3	*For* $Q_{-n-3/2}^{\mu}(z)$ *read* $Q_{n-3/2}^{\mu}(z)$. *For* $z^{2n-\mu+3/2}$ *read* $\pi^{1/2}z^{-n-\mu-3/2}$.
1010	8.772.3	*For* $\left(\frac{z+1}{2}\right)^{-\nu}$ *read* $\left(\frac{z+1}{2}\right)^{\nu}$.
1013	8.792	*For* $\Sigma_{k=1}^{\infty}$ *read* $\Sigma_{k=0}^{\infty}$.
1015	8.812	The hypergeometric function should read $$F\left(\frac{m-n}{2}, \frac{m-n+1}{2}, \frac{1}{2} - n; \frac{1}{x^2}\right).$$
1019	8.831.3	*For* $2E\left(\frac{n-1}{2}\right)$ *read* $E\left(\frac{n-1}{2}\right)$.
1023	8.852.2	*For* 2^{-m} *read* 2^{-2m}.
1025	8.911.1	*For* $(2n)!/2n(n!)^2$ *read* $(2n)!/2^n(n!)^2$.
1028	8.923	*For* $\Sigma_{k=0}^{\infty}$ *read* $\Sigma_{k=1}^{\infty}$ and add $\pi x/2$ to the right side.
1028	8.924.1	*For* 9062.1 (in reference) *read* 9060.1.
1073	9.521.2	*For* [Re $z > 0$] *read* [Re $z < 0$].
1079	9.635.1	Add $4(-1)^{n+1}(3^{n-1} - 1)B_1$ to the right side.
1079	9.635.3	*For* $B_{2n+1}(\frac{1}{4})$ *read* $(B + \frac{1}{4})^{2n+1}$.
1095	Section 11.21	The formulas for cos $r\theta$ and sin $r\theta$ should read $$\cos r\theta = \frac{1}{2}(z^r + z^{-r}), \quad \sin r\theta = -\frac{i}{2}(z^r - z^{-r}).$$
1143–1146		In Section 17.13, the columns headed by $f(p)$ should be headed by $\bar{f}(p)$.