independent of one another as much as possible, so that one can study the simpler functions without becoming involved in more general functions. In illustration, the subject of hypergeometric functions is deferred to Chapter 9, though the transcendents of Chapters 2–8 are for the most part special cases of the generalized hypergeometric function. To reinforce the theoretical development, considerable attention is devoted to applications.

The gamma function is treated in Chapter 1. Chapters 2 and 3 take up the important special cases of the incomplete gamma function. Orthogonal polynomials and expansions in series of these functions are studied in Chapter 4. Chapters 5 and 6 are devoted to Bessel functions and their applications, while Chapters 7 and 8 take up spherical harmonics and applications. An introduction to the Gaussian hypergeometric function is given at the start of Chapter 7. As already implied, a more systematic development is presented in Chapter 9, where the confluent hypergeometric function is also taken up in some detail. Here the connection between the functions of the previous chapters and hypergeometric functions is noted, and a short introduction to generalized hypergeometric functions is given.

The exposition is clear and rigorous, and careful attention is paid to conditions of validity. This is an excellent volume. Each chapter contains a list of problems, which should facilitate use of the book as a text or for self study,

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27[M, X].—E. T. Copson, *Asymptotic Expansions*, Cambridge University Press, New York, 1965, 120 pp., 23 cm. Price $6.00.

Certain important functions may often be represented by asymptotic series which are usually divergent. Nevertheless, the functions may be calculated to some level of accuracy by taking the sum of a suitable number of terms. In some situations, the sequence obtained by a certain weighting of the sequence of partial sums of an asymptotic series converges. Solutions of ordinary differential equations can often be expressed in the form of a definite integral or a contour integral. Thus, the subject of asymptotics is very important to both pure and applied mathematicians.

This volume gives an excellent treatment of asymptotic expansions of transcendents defined by integrals. After an introductory account of the properties of asymptotic expansions (Chapters 1 and 2), the standard methods of deriving asymptotic expansions are explained in detail and illustrated with special functions. These techniques include integration by parts (Chapter 3), the method of stationary phase (Chapter 4), Laplace's approximation (Chapter 5), Laplace's integral and Watson's lemma (Chapter 6), the method of steepest descent (Chapter 7) and the saddle-point method (Chapter 8). Chapter 9 treats Airy's integral by various methods. For the most part, the expansions discussed are not uniform. Uniform asymptotic expansions is the subject of Chapter 10.

Professor Copson's volume presupposes only a knowledge of the more elementary notions of real and complex variable theory. The subject matter is within the capabilities of undergraduate students.

The volume is very readable and suitable for self-study or as an academic textbook. In this connection, the utility of the text would have been considerably enhanced by the inclusion of exercises.

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