39[2.05, 3, 4, 5, 9, 13.05, 13.15].—J. WALSH, Editor, *Numerical Analysis: An Introduction*, Thompson Book Co., Washington, D. C., 1967, xiv + 212 pp., 24 cm. Price $12.00.

This informative book is based on a series of lectures delivered at a symposium organized by the Institute of Mathematics and its Applications at Birmingham, England in July 1965. It is addressed principally to nonspecialists in numerical analysis engaged in applying numerical techniques to the solution of problems in both pure and applied mathematics.

The lectures have been arranged in twelve chapters, which are largely self-contained. Especially helpful to the reader are the up-to-date references appended to the successive chapters, which direct his further study up to the frontiers of current research.

Following a condensed general survey by L. Fox, the topics considered in the succeeding chapters include linear algebraic equations, eigensystems of matrices, the numerical solution of both ordinary and partial differential equations, polynomial and rational approximation to functions of one variable, minimization of functions of several variables, application of computers to pure mathematics, mathematical techniques in operations research, industrial applications of numerical analysis, and computation in British school and university teaching.

In addition to Professor Fox, the contributors are D. W. Martin, J. H. Wilkinson, J. C. P. Miller, Joan Walsh, H. H. M. Pike, A. R. Curtis, M. J. D. Powell, H. P. F. Swinnerton-Dyer, S. Vajda, H. P. Y. Hitch, H. H. Robertson, M. E. Silvester, R. Hetherington, A. J. Moakes, and J. Crank.

This series of lectures constitutes a valuable, timely supplement to the similar series of lectures offered by the National Bureau of Standards in 1957 and 1959, which are also available in book form [1].

J. W. W.

1. JOHN TODD, Editor, *A Survey of Numerical Analysis*, McGraw-Hill Book Co., 1962. (See *Math. Comp.*, v. 17, 1963, p. 89, RMT **3**.)

40[2.10].—BRUCE S. BERGER & ROBERT DANSON, *Tables of Zeros and Weights for Gauss-Laguerre Quadrature*, ms. of 4 typewritten pp. + 15 computer sheets deposited in the UMT file.

These manuscript tables consist of 24S approximations in floating-point form to the abscissas, x_{kN}; the weights, a_{kN}; and the weights multiplied by exp x_{kN} associated with the Gauss-Laguerre quadrature formula for $N = 100$, 150, 200, and 300.

According to the introductory text, the underlying calculations were performed on a CDC 6600 system, using double-precision floating-point operations accurate to about 30S. The zeros of the corresponding Laguerre polynomials were calculated by Newton's method and were checked by the relations $\sum_{k=1}^{N} x_{kN} = N^2$ and $\prod_{k=1}^{N} x_{kN} = N!$ to 26S and 24S, respectively. Similar summation tests were applied to a_{kN} and to a $a_{kN} \cdot x_{kN}^{n}$, for $n = 1$, 7, and 15. These check relations were adapted from those employed by Rabinowitz and Weiss [1].

The present tables constitute a useful supplement to the extensive 30S tables of Stroud and Secrest [2].

J. W. W.

1. PHILIP RABINOWITZ & GEORGE WEISS, "Tables of abscissas and weights for numerical evaluation of integrals of the form $\int_0^\infty e^{-x}x^n f(x)dx$," *MTAC*, v. 13, 1959, pp. 285–294.
2. A. H. STROUD & DON SECREST, *Gaussian Quadrature Formulas*, Prentice-Hall, Englewood Cliffs, N. J., 1966, pp. 254–275.

41[2.10].—H. TOMPA, *Abscissae and Weight Factors for Gaussian Integration with* $N = 192$, one typewritten p. + two computer sheets deposited in UMT file.

In a recent note [1] the author has described an algorithm for performing Gaussian quadrature with $N = 2^j$ and $3 \cdot 2^{j-1}$. For such values of N, 30S approximations to the abscissas and weight factors are available [2] up to $j = 9$ and 8, respectively, except for $N = 192$. This omitted case is covered by the present manuscript table, which gives the pertinent data to 21D.

The underlying calculations were performed on an IBM 1620 using floating-point arithmetic with a 25-digit mantissa and a greatly simplified version of the FORTRAN program given on pp. 29 and 30 of [2].

J. W. W.

1. H. TOMPA, "Gaussian numerical integration of a function depending on a parameter," *Computer J.*, v. 10, 1967, pp. 204–205.
2. A. H. STROUD & DON SECREST, *Gaussian Quadrature Formulas*, Prentice-Hall, Englewood Cliffs, N. J., 1966.

42[2.10, 2.15, 2.25, 2.35, 3, 8, 12, 13].—WILLIAM S. DORN & HERBERT J. GREENBERG, *Mathematics and Computing: with Fortran Programming*, John Wiley & Sons, Inc., New York, 1967, xvi + 595 pp , 24 cm. Price $8.95.

This text is neither fish nor fowl, but a tasty mixture of both: the mathematics is eminently practical in its orientation, and the computing avoids a "cook-book" approach. The authors manage to weave together a number of subjects in a way that leads the student in a variety of interesting directions—differential and integral calculus, infinite series, iterative and finite methods for linear and nonlinear systems, logic, and probability. The level of the text is appropriate for perhaps freshmen or sophomores, or for bright high school students.

It might be appropriate to characterize the book as a beginner's introduction to numerical analysis, since there is emphasis on how to go about finding solutions to real-life problems and how to handle the difficulties that typically arise. Since it is written in an easy-going style with extensive discussion of each topic, the book should give the lecturer freedom to emphasize particular aspects in greater detail with the assurance that the student will be able to cover others on his own.

JOHN R. EHRMAN

Stanford Linear Accelerator Center
Stanford University
Stanford, California

43[2.10, 2.35].—PHILIP J. DAVIS & PHILIP RABINOWITZ, *Numerical Integration*, Blaisdell Publishing Co., Waltham, Mass., 1967, ix + 230 pp., 23 cm. Price $7.50.

"In writing this book, we have tried to keep our feet on the ground and our head in the clouds: By ground we imply utility in day-to-day computation and