

## REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the American Mathematical Society classification scheme. The 1980 Mathematics Subject Classification can be found in the December index volumes of Mathematical Reviews.

**8[65–01].**—ROBERT F. CHURCHHOUSE (Editor), *Numerical Methods, Handbook of Applicable Mathematics* (Walter Ledermann, Chief Ed.), Vol. III, Wiley, Chichester, New York, Brisbane, Toronto, 1981, xvii + 565 pp., 25 cm. Price \$85.00.

The premise of this volume is that it is a work for the novice who wants to quickly break into a particular topic and then apply it. The topics treated are by and large typical of a one year basic course in Numerical Analysis. However, the chapters on quadrature and, in particular, on integral equations go beyond the typical university course.

The eleven chapters live up to their promise of being independent and it is thus possible to start reading exactly the chapter one is interested in. The numerical methods are well explained with worked examples. An Appendix contains seventeen Fortran programs. These are mainly of a very basic nature; many similar ones are preprogrammed in modern calculators. Listing them may, however, be a service to people working in places isolated from serious computing power.

This volume is appropriate for a reference library. I may envision its use as follows: In my office. Enter a graduate student from, say, Biology. "I need to solve this differential equation but I never took a course in numerical methods. Could you point me to a book where I could learn something quickly about what our canned programs do?" I would be happy to direct that student to this book.

L.B.W.

**9[65M10].**—ROBERT VICHNEVETSKY & JOHN B. BOWLES, *Fourier Analysis of Numerical Approximation of Hyperbolic Equations*, SIAM Studies in Applied Mathematics, SIAM, Philadelphia, PA, 1982, xii + 140 pp., 23½ cm. Price \$21.50.

This book is devoted to a detailed understanding of phenomena in numerical solution of hyperbolic problems. Simple model cases are treated where it is possible to use Fourier techniques in an effortless way; without this use of Fourier analysis, many of the phenomena discussed would at present not be understood.

The numerical methods considered include finite difference methods, Galerkin-spline methods, collocation methods and spectral methods. Interrelations between

©1984 American Mathematical Society  
0025-5718/84 \$1.00 + \$.25 per page