

## REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the American Mathematical Society classification scheme. The 1991 Mathematics Subject Classification can be found in the annual subject index of *Mathematical Reviews* starting with the December 1990 issue.

**5[65-01]**—*Numerical analysis, an introduction*, by Walter Gautschi, Birkhäuser, Boston, 1997, xiii + 506 pp., 24 cm, hardcover, \$64.50

This textbook for an introductory course on numerical analysis on the upper undergraduate level is off the beaten track in several respects. First of all, it interprets the word analysis in its title in its literal sense; the material has been restricted to areas from mathematical analysis so that there is no treatment of numerical linear algebra. On the other hand, numerical ordinary differential equations cover nearly half of the volume. Secondly, while a scan of the Table of Contents seems to indicate a simple-minded approach, the actual reading of whatever chapter reveals a host of details in the theorems, remarks, observations, etc., which are of interest even to the expert. This aspect is further expanded by “Notes” following each chapter, which cover some of the history as well as further developments, with handy pointers to references. Also, the text manages to keep the balance between an intuitive, readily understandable style of presentation and careful, precise formulations. Finally, each chapter is followed by “Exercises and Machine Assignments” of an unusual multitude and variety. They will constitute a welcome and valuable source of material also for those who teach from a different text.

Altogether, the volume reflects the insight and the experiences of a lifetime’s occupation with numerical computation and with teaching numerical analysis, which is a never-ending challenge. I believe that it will give the students the right attitude toward the science and art of numerical computation.

HANS J. STETTER

**6[65-01]**—*Afternotes goes to graduate school, lectures in advanced numerical analysis*, by G. W. Stewart, SIAM, Philadelphia, PA, 1998, xii + 245 pp., 25½ cm, softcover, \$35.00

This monograph consists of a set of notes on numerical analysis written shortly after the author lectured in a graduate course given at the University of Maryland. The notes consist of 26 sections corresponding to the lectures and the topics presented fall into four categories: Approximation (9 lectures, 74 pp.), Splines (2 lectures, 20 pp.), Eigensystems (7 lectures, 59 pp.), and Krylov sequence methods (6 lectures, 44 pp.), with two additional lectures giving some classical results on linear and nonlinear iterative methods. Stewart’s presentation is intuitive and rapid but, at the same time, clear with considerable attention paid to motivation of a particular approach or algorithm. He rarely gives a proof in complete detail, but instead enough detail is provided about the essential ideas that a mature reader