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.

11[65–01, 65L05, 65P05].—JOEL H. FERZIGER, *Numerical Methods for Engineering Application*, Wiley, New York, Chichester, Brisbane and Toronto, 1981, xii + 270 pp., 24 cm. Price $29.95.

This book is a compendium of numerical methods for differential equations which is intended as a reference for practicing engineers and as a text for engineering students. The style is informal throughout—no theorems or proofs.

There are four chapters in the book. The first two are very brief introductions to interpolation and quadrature. The bulk of the text (202 pages) is devoted to ordinary and partial differential equations. The approach used by the author is to state a method and illustrate it by showing the output (tabular or graphical) of a corresponding program applied to some problems. There is little in the way of guidelines for the use of library routines.

The text contains 46 exercises, two appendices, an index, and a short annotated bibliography to the textbook literature.

J. THOMAS KING

Department of Mathematical Sciences
University of Cincinnati
Cincinnati, Ohio 45221

12[65N30, 65N50].—GRAHAM F. CAREY & J. TINSLEY ODEN, *Finite Elements, Computational Aspects*, Vol. III, Prentice-Hall, Englewood Cliffs, N. J., 1984, x + 350 pp., $23\frac{1}{2}$cm. Price $35.95.

To quote the authors "our purpose... (is) to develop certain computational aspects of the (Finite Element) Methods to a greater extent". As such, this book can be considered as the practical companion to their Volume I. Programs given in Volume I are detailed here. A first chapter recalls rapidly the main aspects of a computer simulation by the Finite Element Method (FEM). This chapter relies heavily on knowledge of Volume I or some introductory course on FEM. Next, the authors in a very long chapter deal with the central question of FEM meshes. First they cover briefly the question of mesh generation and go on to the more advanced subject of mesh refinement, including boundary layers and use of a posteriori estimates for automatic mesh refinement in one-dimensional problems. The more delicate question of 2D automatic mesh refinement is treated in a long subsection; examples are given from the ambitious work of Babuška and his collaborators.

0025-5718/85 $1.00 + $.25 per page