

*Computing*, 2nd ed., Cambridge Univ. Press, Cambridge, 1992, xxvi+994 pp., 25 cm. Price \$49.95.

The first edition of these widely known volumes has been reviewed respectively in [2, 3]. Virtually every chapter in the present edition has undergone reorganization or expansion, in text as well as in computer routines, reflecting newer developments in methodology and omissions in the first edition. The major addition is a new chapter on integral equations, inverse problems, and regularization. (Surprisingly, there is no reference to [1].) All in all, more than 100 new routines have been added, almost all of the old ones still being there, though often with improved codes. To compensate for this substantial growth in material, many topics deemed "advanced" are now set in smaller type. Even so, the volumes have swelled to nearly 1000 pages, from the original 700–800 pages.

W. G.

1. C. T. H. Baker, *The numerical treatment of integral equations*, Clarendon Press, Oxford, 1977.
2. F. N. Fritsch, Review 3, *Math. Comp.* **50** (1988), 346–348.
3. W. Gautschi, Review 6, *Math. Comp.* **52** (1989), 253.

**4[65–01].**—KENDALL ATKINSON, *Elementary Numerical Analysis*, 2nd ed., Wiley, New York, 1993, xiv+425 pp., 24 cm. Price \$61.95.

For a review of the first edition, see [1]. In the present edition, the outlay and character of the text have remained the same. Three paragraphs have been added, one on the general fixed-point method for a single equation, and one each on iterative methods for solving systems of linear, respectively nonlinear, equations. Some other parts of the text have been rewritten and supplied with new examples and problems.

W. G.

1. M. Minkoff, Review 36, *Math. Comp.* **47** (1986), 749.

**5[68–06, 68Q40, 68U99].**—ANDREAS GRIEWANK & GEORGE F. CORLISS (Editors), *Automatic Differentiation of Algorithms: Theory, Implementation, and Application*, SIAM Proceedings Series, Society for Industrial and Applied Mathematics, Philadelphia, 1991, xiv+353 pp., 25  $\frac{1}{2}$  cm. Price: Softcover \$48.50.

Since 1981, when L. Rall's Lecture Note Volume on Automatic Differentiation appeared, efforts directed toward the design and implementation of automatic differentiation software have multiplied. Nevertheless, the awareness among computational scientists of the availability and use of these tools is still rather restricted, even though their potential applicability is almost unlimited. This has been largely due to the fact that no comprehensive presentation of this subject has been available. The volume compiled and edited by A. Griewank