

20[2.00].—J. STOER & R. BULIRSCH, *Introduction to Numerical Analysis*, Translated by R. Bartels, W. Gautschi, and C. Witzgall, Springer-Verlag, New York, 1980, ix + 609 pp., 24 cm. Price \$24.00.

This textbook, which has been translated from a German edition, is a gold mine for anyone looking for facts concerning a large variety of methods in numerical mathematics. It is modern, not only with respect to analysis but also in selection of methods. For example, there are good surveys of the fast Fourier transform, spline functions, the simplex method, minimization methods, stiff differential equations, and the finite element method; several of these subjects are not generally covered in similar literature. On the other hand, partial differential equations as well as integral equations are missing for reasons which are explained but perhaps not too convincingly.

Looking at details, one can express criticism in some respects. Much effort and space is devoted to interpolation in spite of the fact that with general access to computers few people would nowadays perform this kind of calculation. The main interest is actually concentrated on the use of interpolation as a theoretical tool in connection with, e.g., numerical differentiation and integration. To cite one specific example, no one would perform polynomial interpolation on the function $y = \cot x$ for small x (p. 72). If such an interpolation has to be done, the auxiliary function $z = x \cot x$ should be used instead. It gives even better accuracy than rational interpolation (whose supremacy is supposed to be illustrated).

In several places clumsy notations are irritating; as an example, the theorem on page 69 could be mentioned. Quite often "recursive" notations would give a much better overview and even better insight. Far too often, readability is an underestimated quality with textbooks.

The exercises are numerous and as a rule very good and illustrative, most of them original. No answers are given; if supplied, they would add considerably to the value of the book, especially for students who study this course on their own. An appealing feature is the large number of references at the end of each chapter.

As is understood from the review above, this textbook represents an excellent modern and welcome addition to the literature in numerical mathematics.

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21[6.35].—JOHANN SCHRÖDER, *Operator Inequalities*, Academic Press, New York, 1980, xvi + 367 pp., 23½ cm. Price \$39.50.

The subject of this book, operator inequalities, is one which has wide application to various branches of analysis. The author sets up the abstract framework in the first chapter, where he introduces the notions of ordered linear spaces and positive linear operators. There he also states the fixed point theorems and the iterative procedures he will need in the sequel. In the subsequent chapters he extends the abstract ideas and presents a number of applications.