chapter, where one finds not only a formulation of the basic problems and methods of the calculus of variations, but also a detailed discussion of how to construct a variational problem from a given boundary-value, eigenvalue, or integral equations problem, and a thorough exposition of direct methods (due to Ritz, Galerkin, Friedrichs, Trefftz, Synge, and others) for solving variational problems. The remaining three chapters are largely method-oriented, but draw frequently upon the problems discussed earlier for illustration. Chapter VI begins with closed-form solutions by means of series (power series, orthogonal and asymptotic expansions), and then illustrates some general principles and approaches toward the numerical treatment of problems. The method of finite differences for differential equations, and the quadrature method for integral equations, of course, hold a central position in the context of this section, and are therefore discussed very thoroughly in Chapter VII. Iteration methods, finally, are the subject of Chapter VIII, which contains general contraction and fixed point theorems as well as a formulation of Newton's method and the method of false position in a Banach space.

W. G.

16[2.05, 2.10, 2.15, 2.20, 2.35, 2.40, 2.55, 3, 4].—Charles B. Tompkins & Walter L. Wilson, Jr., *Elementary Numerical Analysis*, Prentice-Hall, Inc., Englewood Cliffs, N. J., 1969, xvi + 396 pp., 24 cm. Price $10.50.

The book is directed to a wide audience of beginning students and offers them a sound introduction into the techniques and underlying philosophies of numerical analysis. A commendable effort has been made to motivate all subjects discussed, and to emphasize general principles involved. While the selection of topics is fairly standard, it is an unusual feature of the book that all formulas are displayed in a one-line format not unlike that of present-day computer outputs. Table of contents: 1. Introduction, 2. Taylor's formula: truncation error, 3. Iteration processes: Newton's method, 4. Systems of linear equations, 5. Eigenvalues and eigenvectors, 6. Finite differences, 7. Interpolation, 8. Least squares estimates, 9. Numerical differentiation, 10. Numerical integration, 11. Difference equations, 12. Numerical solution of differential equations.

W. G.

17[2.05, 7].—Géza Freud, *Orthogonale Polynome*, Birkhäuser Verlag, Basel, Switzerland, 1969, 294 pp., 25 cm. Price Sfr. 42.00.

To indicate the general character of this important book and how it relates to earlier monographs on the subject, it is best to quote (in free translation) from the author's preface.

"This book is concerned with the general theory of orthogonal polynomials relative to a nonnegative measure on the real line. For prerequisites, it is assumed that, beyond the usual basic analysis courses, the reader has completed an introductory course in real analysis. Only the last chapter requires some knowledge of complex analysis. I hope to offer something useful to every reader, regardless of whether he