

REVIEWS AND DESCRIPTIONS OF TABLES AND BOOKS

The numbers in brackets are assigned according to the revised indexing system printed in Volume 28, Number 128, October 1974, pages 1191–1194.

39 [2.05, 2.10, 6.15].—L. M. DELVES & J. WALSH, Editors, *Numerical Solution of Integral Equations*, Clarendon Press, Oxford, 1974, 335 pp., 24 cm. Price \$14.50.

The book consists of a collection of papers, by various authors, presented at the University of Manchester Summer School in July 1973, dealing with methods and principles in the numerical solution of integral and integro-differential equations.

The material is divided into three parts. Part 1, consisting of the first five chapters, gives a brief overview of the mathematical tools necessary in the numerical analysis of integral equations. The topics discussed are: the theory of linear integral equations, numerical integration, linear algebra, functional analysis, and approximation theory.

Part 2, Chapters 6–18, deals with the actual numerical methods for solving various integral equations, including Fredholm equations of first and second kinds, Volterra equations of first and second kinds, various ordinary and partial integro-differential equations, and nonlinear equations and systems. This is a reasonably complete and up-to-date survey of known numerical techniques. Both theoretical and practical aspects are considered.

Part 3, Chapters 19–25, is a selection of various applications, such as potential and flow problems, water waves, and diffraction and scattering. These are examples of the usefulness of integral equation techniques in the solution of a variety of problems from engineering and physics.

The papers in this volume are expository and written in a rather informal style. The material is generally presented in outline form, without proofs or undue rigor, emphasizing principles rather than technical or algorithmic detail. For more specific information the reader will have to consult the cited references; most papers fortunately include a good bibliography. The apparent aim of the book is to provide the reader with a quick and painless introduction to the use of integral equations in practical applications. In this aim it has succeeded quite well.

PETER LINZ

Department of Mathematics
University of California
Davis, California 95616

40 [7.00].—R. B. DINGLE, *Asymptotic Expansions: Their Derivation and Interpretation*, Academic Press, New York and London, 1973, xv + 521 pp., 24 cm. Price \$38.00.

This is a valuable book on asymptotics. The author acknowledges he is a theoretical physicist; but when it comes to the subject of asymptotics, his use of theory as it relates to mathematical rigor in establishing that certain series are asymptotic, as the concept is usually employed, plays a minor role. The tempo is set in the opening sentence of what is called the prologue. “Throughout this book, the designation ‘asymptotic series’ will be reserved for those series in which for large values of the variable at all phases the terms first progressively decrease in magnitude, then reach a minimum and thereafter increase.” More on this point, he later states that the “exposition will be heuristic and descriptive rather than rigorously doctrinaire.” The author cites examples