1. Richard Savage & Eugene Lukacs, "Tables of inverses of finite segments of the Hilbert matrix," in *Contributions to the Solution of Systems of Linear Equations and the Determination of Eigenvalues*, NBS Applied Mathematics Series No. 39, U. S. Government Printing Office, Washington, D. C., 1954, pp. 105–108.
2. Richard B. Smith, *Table of Inverses of Two Ill-Conditioned Matrices*, Westinghouse Electric Corporation, Bettis Atomic Power Division, Pittsburgh, Pa., 1957. (See *MTAC*, v. 11, 1957, p. 216, RMT **95**.)

22[3, 4].—Joel N. Franklin, *Matrix Theory*, Prentiss-Hall, Inc., Englewood Cliffs, N. J., 1968, xii + 292 pp., 23 cm. Price $10.95.

The author states in his preface that this book, developed from a course given over the past ten years, intended originally to be a preparation for courses in numerical analysis, but in fact attended by juniors, seniors, and graduate students majoring in mathematics, economics, science, or engineering. Thus, Chapter 3 (optional) is entitled "Matrix analysis of differential equations," and here and there are to be found more concrete applications. The book is probably unique in that, while presupposing almost nothing at the outset, it very quickly but easily arrives at the main theoretical portion dealing with normal forms and perturbation theory, and concludes with a long chapter of nearly 100 pages on numerical methods for inversion and the evaluation of eigenvalues and eigenvectors.

The first two chapters develop the theory of determinants, and that of linear bases (56 pages). Chapter 6, entitled "Variational principles and perturbation theory," includes the minimax and separation theorems for Hermitian matrices, Weyl's inequalities, the Gershgorin theorem, norms and condition numbers, and ends with a continuity theorem. For solving systems and inverting matrices only triangular factorization is included, but with special attention to band matrices; and among iterative methods chief attention is given to Gauss-Seidel, with mention of overrelaxation. For eigenvalues the power method with deflation (but not the inverse power method) is given; reduction to Hessenberg form for a general matrix, and unitary tridiagonalization of a Hermitian matrix with the Givens application of the Sturm sequence; and, finally, the QR method.

A set of exercises of reasonable difficulty follows each section, and there is a three-page index. Unfortunately there is no bibliography, and only very few references (a half dozen or so).

A. S. H.

23[7].—D. S. Mitrinovic, *Kompleksna Analiza* (*Complex Analysis*), Gradjevinska Knjiga, Belgrade, Yugoslavia, 1967, xii + 312 pp., 24 cm.

This volume in the series *Matematicki Metodi u Fizici i Tehnici* consists mainly of text and numerous examples on complex numbers and functions of a complex variable, in the Serbian language. Its connection with computation arises mainly from the appended *Mali Atlas Konformnog Preslikavanja* (*Small Atlas of Conformal Representation*), by D. V. Slavi′. This atlas contains 30 finely drawn diagrams showing level curves u = constant and v = constant in the z-plane when $w = u + iv$ and $z = x + iy$ are connected by functional relationships. The relationships considered are as follows, where the reviewer has grouped pages together, somewhat arbitrarily, for the sake of conciseness.

282–285: $z = w^2$, $z^2 = w$, $z = 1/w^2$, $z^2 = 1/w$.
286–288: $z = (1 + w^2)/w$, $z = 2w/(1 + w^2)$, $z = 1/w$.
289–290: $(1 + z^2)/z = w$, $z^2 = 1 + w^2$.
291–293: $z^2 = 1/(1 + w^2)$, $2z/(1 + z^2) = w$, $1/(1 + z^2) = w$.
294–295: $z = e^w$, $z + \log z = w$.
296–298: $z = \sin w$, $z = \operatorname{cosec} w$, $z = \tan w$.
299–301: $z^2 = e^w - 1$, $e^z = w$, $\exp(1/z) = w$.
302–304: $2z = w + e^w$, $2z = w^2 + \log(w^2)$, $e^z = 1 + w^2$.
305–308: $e^z = \sin w$, $e^z = \tan w$, $\sin z = e^w$, $e^z + e^w = 1$.
309–311: $\sin z = w$, $\tan z = w$, $\operatorname{cosec} z = w$.

It will be noticed that the transformations include several well known in applied mathematics; for example, flow due to two-dimensional point source superposed on uniform stream (p. 295) and edge effect for a parallel plate condenser (p. 302).

At first sight one tends to regret the lack of numerical scales along definite axes, as in some similar diagrams in various editions of Jahnke and Emde, but this reaction appears on consideration to be hardly justified. In many cases the same diagram may be used to illustrate several slightly different functional relationships. Thus the diagram on page 296 may be used, as stated on the page, for

$$z = \sin w\,, \quad z = \cos w\,, \quad z = \sinh w\,, \quad z = \cosh w\,.$$

For the sake of conciseness, the reviewer has listed only one equation (chosen somewhat arbitrarily) for each diagram, but in fact the author's 30 diagrams relate to 92 stated equations.

Where a diagram relates to more than one equation, the user may visualize the axes in the manner appropriate to whichever equation he chooses. In most cases, consideration of the positions of singularities and other special points is sufficient to determine the positions of the axes and the scale, and to enable a few of the level curves to be quickly identified. It then remains only to note that, as explained on page 312, the intervals in u and v are normally $\frac{1}{4}$; but if one of u and v is an angle, both are taken at interval $\pi/18$ ($= 10°$), and small meshes continue to appear approximately square.

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24[7].—ALBERT D. WHEELON, *Tables of Summable Series and Integrals Involving Bessel Functions*, Holden-Day, San Francisco, Calif., 1968, 125 pp., 24 cm. Price $8.50.

The present volume is divided into two parts as is clearly suggested by the title. Part I, by A. D. Wheelon, comprises 14 chapters and is a short glossary of sums of series. The introductory chapter notes several techniques for finding sums of series. Further, each chapter gives historical comments on the series and illustrates how the sums might possibly be evaluated in closed form. The material on methods of