The numbers in brackets are assigned according to the indexing system printed in Volume 22, Number 101, January 1968, page 212.

26[2.10].—JAMES L. KINSEY, *Tables for Gaussian Quadrature of*

$$\int_0^\infty 2x^2 \exp(-x^2) f(x)\, dx,$$

6 pages of tables and 4 pages of explanatory text, reproduced on the microfiche card attached to this issue.

The abscissas and weights for n-point Gaussian quadrature of the integral in the title are tabulated to 20S for $n = 2(1)18$.

A second table gives, to the same precision, the coefficients α_n and β_n in the recurrence formula $P_{n+1}(x) = (x + \alpha_n)P_n(x) + \beta P_{n-1}(x)$ for the polynomials orthogonal on $(0, \infty)$ with respect to the Maxwellian weighting factor $2x^2 \exp(-x^2)$, as well as the normalization integral γ_n for $P_n(x)$. The corresponding error coefficients $d_n = \gamma_n/(2n)!$ are given to 6S in the first table.

Details of the underlying calculations on a CDC 3600 system at the University of Wisconsin are also furnished.

J. W. W.

27[3].—S. J. HAMMARLING, *Latent Roots and Latent Vectors*, The University of Toronto Press, 1970, xi + 172 pp., 26 cm. Price $13.50.

This book gives a descriptive account of methods for the numerical solution of eigenvalue problems. It begins with elementary properties of eigenvalues and their applications; this is not without some minor errors, notably stating a weak form of Gerschgorin's theorem (p. 9) and giving an oversimplified discussion of stability of the Crank-Nicolson method (Section 2.3). After this, the author proceeds to discuss in order the Danilevsky and Krylov methods, eigenvalues of tridiagonal matrices, the Givens and Householder methods, Lanczos' method, the power method, and finally QR.

Most of the discussion is dated, and can be found in either Wilkinson's or Householder's book; indeed the author appeals to one or the other continually for details and rigor. Besides this, there are some glaring omissions: the Givens and Householder methods are only described for symmetric matrices and, in fact, the Hessenberg form for nonsymmetric matrices is barely mentioned. Also, there is very little on inverse iteration for eigenvectors, and the author does not attach enough importance to the QR method (referred to as the method of Francis); only a cursory description is given and its use for symmetric tridiagonal matrices is not even mentioned.

Moreover, much is made of Danilevsky's method requiring only $O(n^3)$ operations to find the characteristic polynomial. However, the possibility of extreme loss of

accuracy in the roots due to ill-conditioned polynomial coefficients, even when the eigenvalues are well-conditioned, is only hinted at. Indeed, the author takes the whole matter of "stability" or "instability" of a method with regard to numerical computation much too lightly. One gets the impression that the author's primary experience and concern is with methods for hand computation, hardly appropriate in this day and age.

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28[3, 4, 5].—A. S. HOUSEHOLDER, *KWIC Index for Matrices in Numerical Analysis*, Volume I: Primary Authors A–J, viii + 124 pp., Volume II: Primary Authors K–Z, vii + 151 pp., 1969, Oak Ridge National Laboratory, Oak Ridge, Tennessee, 28 cm. Available from National Technical Information Service, U. S. Department of Commerce, Springfield, Virginia 22151. Price: Printed copy $3.00, Microfiche $0.65, each volume.

Here are listings of papers and books which Professor Householder has compiled during the last ten years. Subjects included are numerical linear algebra, theory of real and complex matrices, difference schemes for differential equations. For the most part, the subjects of infinite matrices, Banach spaces, Hilbert spaces, matrices over arbitrary fields, combinatorial and functional analysis are not represented.

The 2600 items are listed alphabetically by author and also in a KWIC (Key Word in Context) Index. The authors are also listed separately.

All people who work in the field of matrix computations should be grateful to Professor Householder for making available to us this valuable information retrieved from the passing flood of scientific publications.

A third volume will contain more recent titles and also foreign titles which have not yet been translated.

B. N. P.

29[3, 4, 5, 8, 13.35].—R. V. GAMKRELIDZE, EDITOR, *Probability Theory, Mathematical Statistics, and Theoretical Cybernetics*, translated from Russian, Plenum Press, New York, 1969, vii + 112 pp., 24 cm. Price $15.00.

This book is a peculiar combination including, as it does, two papers entitled: "Markov Processes and Differential Equations" by M. I. Freidlin and "Discrete Problems in Mathematical Programming" by A. A. Korbut and Yu. Yu. Finkel'shtein. As such, two subject matters, entirely and fundamentally disparate, are presented, and the likelihood of finding readers, let alone reviewers, interested in the contents or competent to judge the merits of both, is nil.

This reviewer's competence extends only to the second paper. The first is devoted largely to a survey of the Russian literature (viz., on p. 2, "A great deal of work