**62[2.10].**—T. N. L. Patterson, "Gaussian Formula for the Calculation of Repeated Integrals," tables appearing in the microfiche section of this issue.

Abscissas and weights of the $r$-point Gaussian quadrature formula for the integral

$$(n-1)!\int_{-1}^{1} dx_1 \int_0^{x_1} dx_2 \int_0^{x_2} dx_3 \cdots \int_0^{x_{n-1}} f(x_n)dx_n \equiv \int_{-1}^{1} w(x)f(x)dx$$

are tabulated to 20 significant figures for $n = 2, 4$; $r = 2(2)16$ and $n = 3, 5$; $r = 2(1)16$. The resulting formula is exact if $f(x)$ is a polynomial of degree $2r - 1$ (or $2r$ when $r$ is even). The weighting function is

$$w(x) = (-1)^n w(-x) = (1-x)^{n-1}, \qquad 0 < x \leqq 1 .$$

This has discontinuous even (odd) derivatives at $x = 0$.

A normal approach to such an integration might be to divide the interval into two sections and use either the Gauss-Legendre formula or better still the appropriate Gauss-Jacobi formula in each section separately. However, the existence of these tables does allow the interval $[-1, 1]$ to be treated as a whole.

J. N. L.

**63[2.20, 7].**—Henry E. Fettis & James C. Caslin, *More Zeros of Bessel Function Cross Products*, Report ARL 68–0209, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, December 1968, v + 56 pp., 28 cm. [Released to the Clearinghouse, U. S. Department of Commerce, Springfield, Virginia 22151.]

In this compact report the authors continue their previous 10D tabulation [1] of the roots of the equations (a) $J_0(\alpha)Y_0(k\alpha) = Y_0(\alpha)J_0(k\alpha)$, (b) $J_1(\alpha)Y_1(k\alpha) = Y_1(\alpha)J_1(k\alpha)$, and (c) $J_0(\alpha)Y_1(k\alpha) = Y_0(\alpha)J_1(k\alpha)$.

These new tables give the roots $\alpha_n$ and the corresponding normalized roots $\gamma_n$ of all three equations, for $n = 5(1)10$ and $k = 0.001(0.001)0.3$. For equation (c) these roots are also tabulated corresponding to $k^{-1} = 0.001(0.001)0.3$.

The normalized roots are related to the others by the equation $\gamma_n = (1-k)\alpha_n/(n\pi)$ for (a) and (b), and by $\gamma_n = |k-1|\alpha_n/[(n-\frac{1}{2})\pi]$ for (c). The authors note the properties $\lim_{k\to 1}\gamma_n = 1$ (all $n$) and $\lim_{n\to\infty}\gamma_n = 1$ (all $k$).

For examples of applications of these tables, as well as details of their calculation, the user should consult the earlier report [1].

J. W. W.

1. Henry E. Fettis & James C. Caslin, *An Extended Table of Zeros of Cross Products of Bessel Functions*, Report ARL 66–0023, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, February 1966. (See *Math. Comp.*, v. 21, 1967, pp. 507–508, RMT **64**.)

**64[2.40, 7, 10].**—John Riordan, *Combinatorial Identities*, John Wiley & Sons, Inc., New York, 1968, xii + 256 pp., 23 cm. Price $15.00.

This volume deals in the main with identities involving the binomial coefficients. As is well known, binomial coefficients are the simplest combinatorial entities and arise quite naturally in a wide variety of combinatorial problems.