81[M, X].—PAUL CONCUS, *Additional Tables for the Evaluation of* $\int_0^\infty x^\beta e^{-x} f(x)\, dx$ *by Gauss-Laguerre Quadrature*, ms. of 8 typewritten pages, deposited in UMT File.

Tables of abscissae and weight coefficients to fifteen places are presented for the Gauss-Laguerre quadrature formula

$$\int_0^\infty x^\beta e^{-x} f(x)\, dx \sim \sum_{k=1}^{N} H_k f(a_k), \quad \text{for} \quad \beta = -\tfrac{2}{3} \text{ and } -\tfrac{1}{3}, \quad \text{and} \quad N = 1(1)15.$$

These tables supplement those presented previously [1] for $\beta = -\frac{1}{4}, -\frac{1}{2}$, and $-\frac{3}{4}$. The same computer program was used, and the accuracy of the tables is the same. The values of $\Gamma(\frac{1}{3})$ and $\Gamma(\frac{2}{3})$ used in the calculations were taken from papers of Zondek [2] and of Sherry and Fulda [3].

AUTHOR'S SUMMARY

1. P. CONCUS, D. CASSATT, G. JAEHNIG & E. MELBY, "Tables for the evaluation of $\int_0^\infty x^\beta e^{-x} f(x)\, dx$ by Gauss-Laguerre quadrature," *Math. Comp.*, v. 17, 1963, p. 245–256.
2. B. ZONDEK, "The values of $\Gamma(\frac{1}{3})$ and $\Gamma(\frac{2}{3})$ and their logarithms accurate to 28 decimals," *MTAC*, v. 9, 1955, p. 24–25.
3. M. E. SHERRY & S. FULDA, "Calculation of gamma functions to high accuracy," *MTAC*, v. 13, 1959, p. 314–315.

82[M, X].—V. I. KRYLOV, *Approximate Calculation of Integrals*, The Macmillan Company, New York, 1962, x + 357 p., 23 cm. Price $12.50.

This is a translation of Krylov's *Priblizhennoe Vychislenie Integralov*, which appeared in 1959. The translation is in the American idiom and is clear and readable.

As the translator remarks, the book might more accurately have been named "Approximate Integration of Functions of One Variable", specifically one *real* variable. Multiple integrals are not treated, except for a short aside in Chapter 7. As a treatise on numerical evaluation of single integrals, this is an excellent book: it is clearly written and comprehensive, developing almost all known practical methods of integration and providing thorough treatments of error estimation and of the question of convergence. A great deal of the material appears for the first time in book form; much had been available before this only in the Russian journals. The text proceeds at a fairly, but not excessively, rapid pace, with frequent pauses to linger over the qualities of a particular formula, or subfamily of formulas, from a wide family under consideration.

The contents are divided into three parts. The first, of about 60 pages, is preparatory, developing certain mathematical topics that will be needed subsequently. These are: The Bernoulli Polynomials, Orthogonal Polynomials, Interpolation, and Banach Spaces. In each case the author moves by a short route from the basic definitions and theorems to the material he will need in his treatment of numerical quadrature; for example, he starts with the definition of Banach space, introduces the most important spaces and linear operators, and proves the uniform boundedness principle, in a very readable chapter only 12 pages long.

The second part, of over 200 pages length, is the heart of the book. It begins, in Chapter 5, with a general discussion of linear quadrature methods and their errors, and derives a general formula for the remainder in approximate quadrature. Chapter 6 takes up interpolatory quadrature methods, and derives the Newton-Cotes