kernels, positive, anti-hermitian and symmetrizable kernels. Wiener-Hopf equations are briefly dealt with in the last chapter.

The book is definitely intended for the applied mathematician. While there are relatively few examples arising directly from physical problems, the selection of topics reflects the book's aim toward applications. The author has avoided highly abstract formulation and thus made the book available to a large class of readers. It is suitable also as a text for a graduate course in integral equations; the interesting exercises at the end of each chapter contribute to this aspect.

A wide variety of topics is covered in a little over 300 pages; thus the treatment is occasionally brief. However, an extensive, up-to-date bibliography helps to direct the interested reader to the appropriate research papers and more detailed coverage. The main strength of the book is that it brings together a number of important topics in integral equations in an easily accessible form. This alone should make it a useful addition to the collection of the applied mathematician.

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8 [7].—C. WILLIAM MARTZ, *Tables of the Complex Fresnel Integral*, Report NASA SP-3010, Scientific and Technical Information Division, National Aeronautics and Space Administration, Washington, D.C., 1964, v + 294 pp., 27 cm. Copies obtainable from the National Technical Information Service, Operations Division, Springfield, Virginia 22151. Price $4.00.

The title is somewhat misleading, since the tabulation is actually that of the function

$$E(z) = R(z) + iI(z) = \int_0^z \exp\left(\frac{i\pi}{2} u^2\right) du.$$

On the other hand, the complex Fresnel integrals are defined by

$$C(z) = \int_0^z \cos\left(\frac{\pi}{2} u^2\right) du = C_1(z) + iC_2(z),$$

$$S(z) = \int_0^z \sin\left(\frac{\pi}{2} u^2\right) du = S_1(z) + iS_2(z).$$

Hence, to obtain the latter quantities from the tables one must use the relations

$$C_1(z) = [R(x + iy) + R(x - iy)]/2,$$

$$C_2(z) = [I(x + iy) - I(x - iy)]/2,$$

$$S_1(z) = [I(x + iy) + I(x - iy)]/2,$$

$$S_2(z) = [-R(x + iy) + R(x - iy)]/2.$$

In these 5S tables (without differences), y extends over the range $-2.60(0.02)1.82$, while the range of x is variable, depending on the current value of y. For $y > 0$, the tabulation is carried out until both R and I are equal to 0.50000. For $y < 0$, the terminal value of x is either 20 or that value for which subsequent values of R and I are of the order of 10^8 or greater.

The arrangement of the tables is somewhat inconvenient, inasmuch as the second of the four columns on each page is not a continuation of the first column on that page but instead is that of the first column of some subsequent page.

The tables are prefaced by a description of their contents and use, their method of calculation, and means of finding values corresponding to arguments outside the tabular range.

The entries (given in floating-point decimal format) were subjected to a spot check against corresponding values computed independently by the reviewer, and no discrepancies were found.

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9 [9].—MORRIS NEWMAN, *A Table of $\tau(p)$ modulo p, p prime*, $3 \leqq p \leqq 16067$, National Bureau of Standards, August 1972, 7 pp. of computer output deposited in the UMT file.

Let $\tau(n)$ denote the Ramanujan function, defined by

$$\sum_{n=1}^{\infty} \tau(n)x^n = x \prod_{n=1}^{\infty} (1 - x^n)^{24}.$$

Then $\tau(n)$ satisfies the recurrence formula

$$\tau(np) = \tau(n)\tau(p) - p^{11}\tau(n/p),$$

where p is a prime and $\tau(n/p)$ is defined to be zero if p does not divide n. Thus, if p happens to divide $\tau(p)$, then p divides $\tau(np)$ for all n.

As stated in the title, this table lists the values of $\tau(p)$ modulo p for all primes p such that $3 \leqq p \leqq 16067$. In addition to the known cases $p = 2, 3, 5$, and 7, the table shows that there is just one more prime p in the indicated range that divides $\tau(p)$; namely, $p = 2411$.

The table was computed by means of the congruence

$$\tau(n) \equiv 540 \sum_{k=1}^{n} \sigma_3(k)\sigma_3(n - k) \bmod n,$$

where $\sigma_3(n)$ denotes the sum of the cubes of the divisors of n.

This table was motivated by the unresolved question as to the existence of an n for which $\tau(n) = 0$.

AUTHOR'S SUMMARY

EDITORIAL NOTE: From D. H. Lehmer's table of $\tau(n)$ for $n = 1(1)10000$ (*Math. Comp.*, v. 24, 1970, pp. 495–496, UMT 41) several $\tau(p)$ were selected and reduced (mod p) and no discrepancies were found when the results were compared with those in the present table. For $p = 2411$, one finds