Bessel function itself. Incomplete functions are also known as associated Bessel functions. Clearly, there are as many incomplete functions associated with $J_\nu(z)$ as there are integral representations for $J_\nu(z)$ of the kind specified. Remarks similar to the above also hold for $I_\nu(z)$, $K_\nu(z)$ and the Hankel functions. The wordings 'complete' and 'incomplete' are used in a similar fashion for other types of special functions.

There are a number of texts on the special functions that satisfy linear homogeneous differential equations. Except for original works, no textual information on solutions of nonhomogeneous equations exists, except for the rather recent volume by A. W. Babister, *Transcendental Functions Satisfying Nonhomogeneous Linear Differential Equations*, The Macmillan Co., New York, 1967 (see *Math. Comp.*, v. 22, 1968, pp. 223–226). Though the volume under review treats a special differential equation, it is a welcome and valuable addition to the literature, in view of its applicability to numerous problems in mathematical physics and other applied disciplines. Furthermore, there is little overlap with the Babister volume.

The first six chapters deal with various incomplete functions and their mathematical properties, including integral representations, differential and difference equations, series expansions, asymptotic expansions, integrals, etc., i.e., all the properties one normally associates with complete functions. Chapters VII–IX describe numerous applied problems from the fields of wave propagation and diffraction, solid state theory, electromagnetism, atomic and nuclear physics, acoustics, plasma and gasdynamics and exchange processes between liquid and solid phases which lead to incomplete cylindrical functions.

Finally, Chapter X is a compendium of tables and formulas for evaluation of incomplete cylindrical functions. There are a list of symbols, and author and subject indices. The bibliography of 84 items in the original Russian edition is fairly complete. The translators have added five items to the list, but other references should have been added in both editions.

Y. L. L.

22 [7].—Henry E. Fettis & James C. Caslin, *A Table of the Inverse Sine-Amplitude Function in the Complex Domain*, Report ARL 72-0050, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, April 1972, iv + 174 pp., 28 cm. Copies available from the National Technical Information Service, Springfield, Virginia 22151. Price $3.00.

The Jacobian elliptic functions with complex argument arise in numerous applications, e.g., conformal mapping, and tabular values are available in [1] and [2]. Often, one desires the inverse function. This could be obtained by inverse interpolation in the above tables. However, such a procedure is inconvenient and of doubtful accuracy, especially in some regions where a small change in the variable produces a large change in the function. Charts are available in [1] from which qualitatively correct values of the inverse could be deduced, but no prior explicit tabulation is known.

Consider

$$z = \mathrm{sn}(w, k), \qquad z = a + ib, \qquad w = u + iv,$$

$$u + iv = \mathrm{sn}^{-1}(a + ib) = F(\psi, k),$$

$$a + ib = \sin \psi = \sin(\theta + i\varphi),$$

where $F(\psi, k)$ is the incomplete elliptic integral of the first kind and k is the usual notation for the modulus. Let C, D, E and F stand for certain ranges of the parameters. Thus

$$C : 0(0.1)1; \qquad D : 0.9(0.01)1;$$

$$E : 0.01(0.01)0.1; \qquad F : 0.1(0.1)1.$$

Let K and K' be the complete elliptic integrals of the first kind of modulus k and $k' = (1 - k^2)^{1/2}$, respectively. Then, the tables give 5D values of $u/k + iv/k'$ for

$$k = \sin \theta, \qquad \theta = 5°(5°)85°(1°)89°,$$

and the ranges

$$a = C, b = C; \quad a = D, b = C; \quad a = C, b^{-1} = E; \quad a = C, b^{-1} = F;$$

$$a^{-1} = E, b = C; \quad a^{-1} = F, b = C; \quad a^{-1} = E, b^{-1} = E;$$

$$a^{-1} = F, b^{-1} = F.$$

The headings for each page of the tables were machine printed so that no confusion should arise, provided it is understood that $K = \sin 5$, for example, should read $k = \sin 5°$.

The method of computation and other pertinent formulae are given in the introduction.

Y. L. L.

1. H. E. Fettis & J. C. Caslin, *Elliptic Functions for Complex Arguments*, Report ARL 67-0001, Aerospace Research Laboratories, Office of Aerospace Research, United States Air Force, Wright-Patterson Air Force Base, Ohio, January, 1967. See *Math. Comp.*, v. 22, 1968, pp. 230–231.

2. F. M. Henderson, *Elliptic Functions with Complex Arguments*, Univ. of Michigan Press, Ann Arbor, Michigan, 1960. See *Math. Comp.*, v. 15, 1961, pp. 95, 96.

23 [8].—Lai K. Chan, N. N. Chan & E. R. Mead, *Tables for the Best Linear Unbiased Estimate Based on Selected Order Statistics from the Normal, Logistic, Cauchy, and Double Exponential Distribution*, The University of Western Ontario, London, Ontario, 1972. Ms. of 3 typewritten pp. + 1187 computer sheets deposited in the UMT file.

If $X(1) < X(2) < \cdots < X(N)$ represent the order statistics corresponding to a random sample of size N from a population with given probability density function of the form $(1/\sigma)f((x - \mu)/\sigma)$, where μ and σ are location and scale parameters, respectively, then

(1) when $\sigma = \sigma_0$ is known, μ can be estimated by a linear estimate of the form

$$U = a_1 X(n_1) + a_2 X(n_2) + \cdots + a_k X(n_k) - A\sigma_0;$$