mann, $\Gamma(s)$ is the familiar function of Euler, and D stands for the operation of differentiation. The symbolic inversion operator is realized by the combination of the operation $\sum_0^\infty \mu(n)F(nx)$, which converts the Lambert transform into a Laplace transform, and the Post-Widder formula, which is known to invert the latter. Here $\mu(n)$ is the Möbius function. (Received May 28, 1949.)

Logic and Foundations

460. J. B. Rosser and Hao Wang: *Nonstandard models for formal logics.*

A model for a logic is called nonstandard if it fails to have certain properties which are apparently called for by the axioms of the logic. Thus, if a logic L contains the ordinal numbers and in a model M of L the ordinal numbers of L are represented by a subset of M which is not well-ordered, then M is a nonstandard model of L. For the system of logic known as Quine's New Foundations, it is shown that there are no standard models. For a certain logic L with a simple theory of types, the existence of a standard model is shown, and it is further shown that within various other formal logics (including one with a simple theory of types) one can prove that L has a standard model. It is further shown for logics in general that if they are ω-consistent, then they cannot prove about themselves that if they are consistent, then they must have a standard model. Since the usual theorems about modelling can be proved within such logics (a proof of this is sketched), it follows that the property of having a standard model is quite exceptional, and so may fail for other logics besides Quine's New Foundations. (Received April 26, 1949.)

Topology

461. Mary E. Estill: *Concerning abstract spaces.*

Let Axiom 1_3 denote the axiom resulting from the omission of condition (4) in the statement of Axiom 1 of R. L. Moore's *Foundations of point set theory*. Let Axiom $1''$ denote the axiom obtained by replacing condition (4) of Axiom 1 by the statement: if $g_1, g_2, \cdots$ is a sequence such that, for each n, g_n is a region of G_n containing g_{n-1}, then $g_1, g_2, \cdots$ have a point in common. In his paper *Concerning separability* Moore has shown that if Axioms 0 and 1 hold true and there do not exist uncountably many mutually exclusive domains, then space is separable. In the present paper it is shown that this proposition does not remain true if Axiom 1 is replaced by Axiom 1_3. The relationship between several modifications of Axiom 1 are considered. In particular it is shown that there is a space satisfying Axioms 0 and 1_3 which is not a subspace of any space satisfying Axioms 0 and $1''$ and also that there is a space satisfying Axioms 0 and $1''$ which is not a subspace of any space satisfying Axioms 0 and 1. (Received May 31, 1949.)