Each of the remaining four chapters is devoted to a classical result of universal algebra.

Chapter 2 is centered around Birkhoff's subdirect decomposition theorem. Chapter 3 presents Ore's result on direct decompositions. Chapter 4 is concerned with free algebras and free extensions of partial algebras. Finally, Chapter 5 is a presentation of Birkhoff's characterization of varieties (equational classes) of algebras.

After Chapter 1, relational systems are seldom referred to. However, an interesting feature of this book is that most of the results are established for *infinitary* algebras. Throughout the book the close interplay between universal algebra and lattice theory is stressed. There are many problems, some simple applications of the text material, and other substantial excursions into interesting sidelines.

Even though this book is not nearly as comprehensive as those of P. M. Cohn and G. Grätzer, nor was it intended to be, it provides a different perspective to some of the results and so could be studied profitably before, or in conjunction with, either of the above books.

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Classical Harmonic Analysis and Locally Compact Groups. BY HANS REITER. Oxford Univ. Press, 70 Wynford Drive, Don Mills (1968). xi+200 pp.

If the title is to indicate the subject matter of a book, this one should have been entitled "Wiener's (general Tauberian) theorem and locally compact groups". In fact, Wiener's theorem and its generalizations to (a) various types of algebras on groups and (b) the problem of structure of closed ideals or, by duality, spectral synthesis, are the only topics of "classical harmonic analysis" which are discussed at any length (i.e. with proofs).

On the topic of spectral synthesis the discussion is fairly extensive and includes most of the general theory as well as some concrete examples showing e.g. that the unit sphere in R^n, $n \geq 3$, is not a set of spectral synthesis for L^∞ (Schwartz), while the unit circle in R^2 is (Herz). It does not go so far as proving Malliavin's general result on the failure of spectral synthesis in $L^\infty(G)$ for any noncompact abelian group G, or discussing his notion of "set of spectral resolution".

The other topic studied in the book is integration on locally compact groups. Various properties of the Haar measure are discussed and although no existence proof is given, the reader is really offered a choice of proofs by means of many references, and a feeling for what the Haar measure looks like by means of examples. Harmonic analysis on locally compact abelian groups is described rather than done (as it is for the classical cases), a fact which in my opinion somewhat reduces the

https://doi.org/10.1017/S0008439500031052 Published online by Cambridge University Press

usefulness of the book for beginners. More specialized readers may find it quite useful.

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The Confluent Hypergeometric Function. BY HERBERT BUCHHOLZ. Springer-Verlag, New York (1969). 238 pp.

The book under review is the English translation of the original German edition which appeared in 1952. Since that time the text has become recognized as the standard treatise in the field. One of the more noteworthy features of the text is the emphasis placed on the physical applications of confluent hypergeometric functions to problems in mathematical physics, in particular the wave equation in parabolic coordinates. The author's viewpoint is basically that of Whittaker and hence aside from a few basic definitions and relationships for Kummer's function the text is devoted to the study of Whittaker functions.

Chapter 1 is concerned with the differential equations satisfied by the Whittaker and related functions, with applications to the wave equation. In Chapter 2 integral representations are obtained and used in Chapter 3 to derive asymptotic expansions. Chapter 4 is devoted to the derivation of a wide variety of series and integrals involving various special cases of the Whittaker functions. In Chapter 5 series of polynomials related to the Whittaker functions (such as those of Laguerre, Hermite, Charlier, etc.) are examined. In Chapter 6 integrals with respect to various parameters are discussed and applications are made to problems in wave propagation. Chapter 7 is concerned with the zeros of the Whittaker functions and to eigenvalue problems arising in physical applications. Included is a discussion of the Green's function for the reduced wave equation in a region bounded by confocal paraboloids of revolution. The book concludes with a summary of special cases of the Whittaker functions, which include cylinder functions, the incomplete gamma function, parabolic cylinder functions, the error and Fresnel integrals, Hermite and Laguerre polynomials, and many others.

The English translation of this important text is more than welcome and the reviewer feels it should occupy a prominent place on the bookshelf of every applied mathematician.

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Lie Theory and Special Functions. BY WILLARD MILLER, JR. Academic Press, New York (1968). xv+338 pp.

On the beginner, the theory of special functions makes the impression of a chaos of formulae which are not connected with each other by some general ideas. A

https://doi.org/10.1017/S0008439500031052 Published online by Cambridge University Press