on intervals and "was assumed only to be finitely additive and nonnegative, and it was that proof of the monotone convergence theorem that brought countable additivity into the theory ". The point the reviewer would like to make is that starting from an elementary definition does not always protect someone from paying the price later on in the theory.

This book is very well written, contains some very good exercises, and proofs are given in full detail. It is an honest attempt by somebody who loves measure theory to try to make this very important tool (the Lebesgue integral) accessible to a wide audience.

How well this book will succeed in achieving its avowed purpose of making the unified treatment of integration widely accepted is perhaps better judged by how fast and how often this book, or similar books, will make it to the classroom.

ELIAS SAAB

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Group representations and special functions, by Antoni Wawrzyńczyk, Mathematics and its Applications, D. Reidel Publishing Co., Dordrecht/Boston/Lancaster, 1984, xvi + 687 pp., $119.00 US; Dfl. 320,--. ISBN 90-277-1269-7

This huge book, a translation of the 1978 Polish original [1], is clearly intended by the author to be a study of the relations between the representation theory of groups and the special functions of mathematical physics. What has emerged is somewhat more restricted: a detailed and extensive study of the theory of spherical functions and harmonic analysis on symmetric spaces, and the application of these theories to certain special functions. The so-called special functions of mathematical physics are those useful functions which arose when physicists obtained explicit solutions of the partial differential equations governing physical phenomena—e.g., the heat, wave, Helmholtz, and Schrödinger equations—through separation of variables. With the development of quantum mechanics in the 1920s and 1930s, it became evident that there were relations between the symmetries of the partial differential equations and some of the special functions that arose as solutions of these equations. However, the first clear formulation of such a relationship appears in Eugene Wigner's 1955 unpublished Princeton lecture notes. The first extensive published treatment of the theory was the 1965 monograph of N. J. Vilenkin in which the achievements of the Gel'fand school in the theory of spherical functions were utilized [2]. This was followed by J. D. Talman's book in 1968, based on Wigner's lectures [3]. In these works the special functions occur as matrix elements of irreducible representations of the fundamental symmetry groups of physics. The matrix elements are defined with respect to a