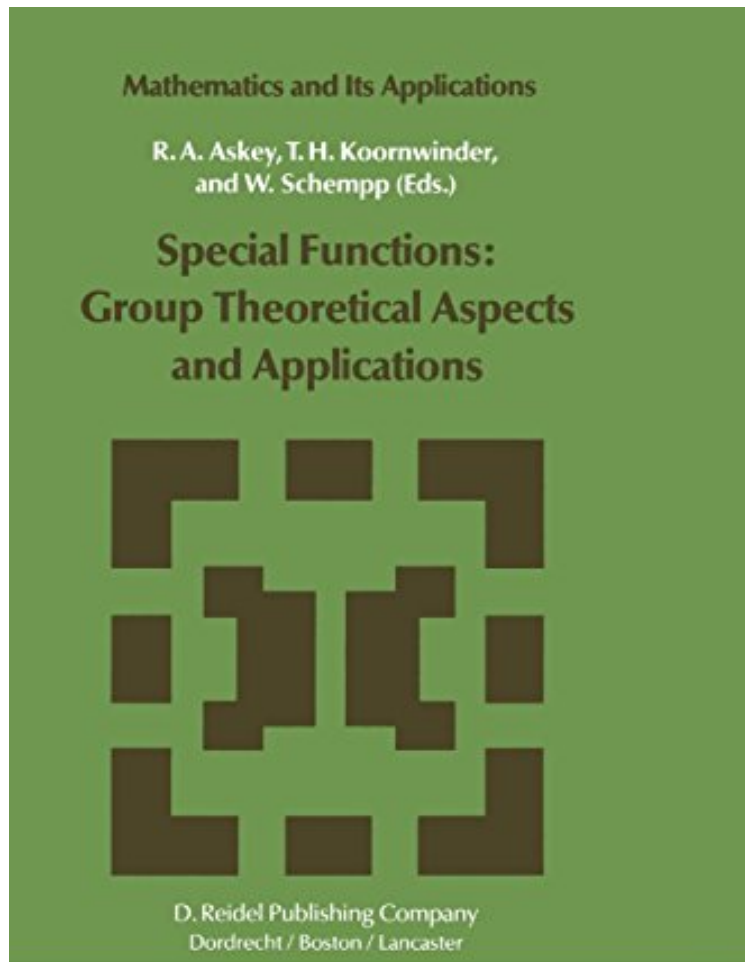


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Special functions, which include the trigonometric functions, have been used for centuries. Their role in the solution of differential equations was exploited by Newton and Leibniz, and the subject of special functions has been in continuous development ever since. In just the past thirty years several new special functions and applications have been discovered. This treatise presents an overview of the area of special functions, focusing primarily on the hypergeometric functions and the associated hypergeometric series. It includes both important historical results and recent developments and shows how these arise from several areas of mathematics and mathematical physics. Particular emphasis is placed on formulas that can be used in computation. The book begins with a thorough treatment of the gamma and beta functions that are essential to understanding hypergeometric functions. Later chapters discuss Bessel functions, orthogonal polynomials and transformations, the Selberg integral and its applications, spherical harmonics, q -series, partitions, and Bailey chains. This clear, authoritative work will be a lasting reference for students and researchers in number theory, algebra, combinatorics, differential equations, applied mathematics, mathematical computing, and mathematical physics.

"...the authors demonstrate a superb familiarity with the historical roots of their subject...All of the chapters are beautifully written...wonderful historical insights...Special Functions will certainly emerge as the chief textbook and reference on special functions for the next several years...This book joins F. W. J. Olver's Asymptotics and Special Functions, first published in 1974 [Academic Press, New York; MR 55 #8655], as the only general books on special functions during the past three decades that belong 'in the Hobbs class,' to quote G. H. Hardy." Mathematical s "The book is packed with brief, challenging superveniences that make it a browser's delight. One of the delightful features of this book is how the sense of history, of mathematics being created and savored, informs the text. This is a splendid work, and I predict that it will be a bestseller as well." Bulletin of the American Mathematical Society