

BOOKS

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Mathematical Methods for Physicists and Engineers, Royal E. Collins, Reinhold Book Corp., New York (1968). 394 pages. \$12.50.

This book differs somewhat from the many others in this subject area in the presentation, which is in the form of programmed instruction. The idea is that the text can be read by the student with little or no assistance from the instructor, thus permitting class time to be devoted to the review of problems. Although the author states that he has successfully taught the material by this method, it seems probable that many students would need help to get through some of the more difficult developments.

The book is intended for advanced undergraduate or beginning graduate students and is suitable for a two-semester course. Emphasis is on mathematical tools needed for advanced work in the physical sciences or engineering, and there are many illustrative problems drawn from those fields. These are clearly worked and add greatly to the value of the text.

The number of topics covered in the book is large, but the major portion is concerned with the solution of boundary value problems and partial differential equations. Early chapters cover some of the background needed in the later discussions, such as vector calculus, Bessel and Legendre functions, and the classical polynomial functions. Linear homogeneous boundary value problems are then introduced and solved by the method of separation of variables. The use of the Laplace transform is described, followed by chapters on conformal mapping, functions of a complex variable, and integral transforms. Inhomogeneous equations with homogeneous boundary conditions are covered, and the solution of the problem with inhomogeneous boundary conditions by means of Green's functions follows. The final chapters of this section are devoted to integral equations and nonlinear differential equations. The book is concluded with short sections on probability theory and miscellaneous topics.

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