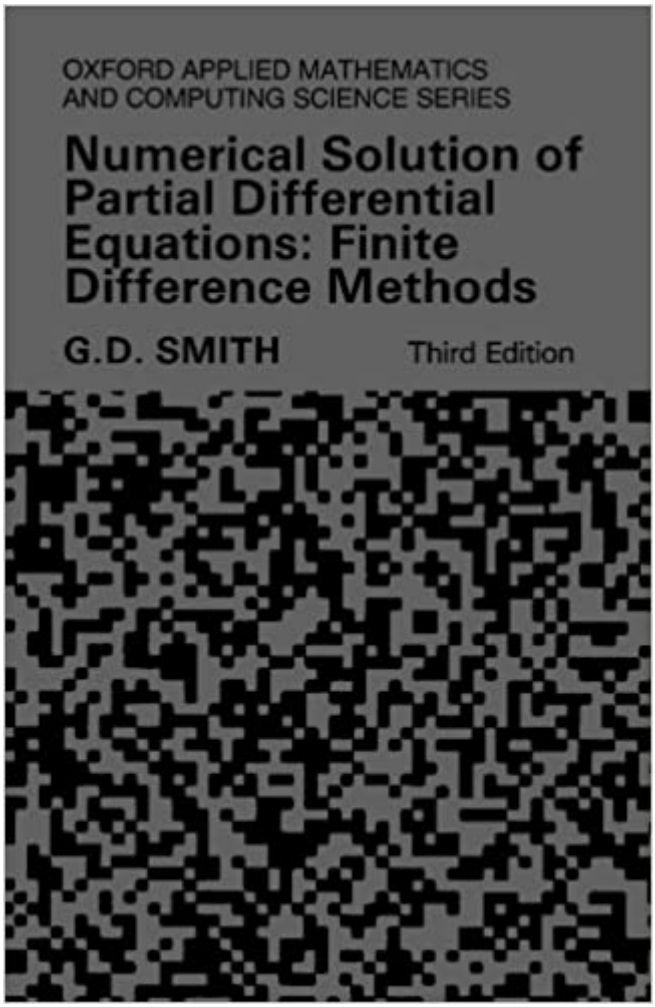
Numerical Solution Of Partial Differential Equations: Finite Difference Methods (Oxford Applied Mathematics And Computing Science Series)

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Synopsis

Substantially revised, this authoritative study covers the standard finite difference methods of parabolic, hyperbolic, and elliptic equations, and includes the concomitant theoretical work on consistency, stability, and convergence. The new edition includes revised and greatly expanded sections on stability based on the Lax-Richtmeyer definition, the application of Pade approximants to systems of ordinary differential equations for parabolic and hyperbolic equations, and a considerably improved presentation of iterative methods. A fast-paced introduction to numerical methods, this will be a useful volume for students of mathematics and engineering, and for postgraduates and professionals who need a clear, concise grounding in this discipline.

Book Information

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Customer Reviews

G. D. Smith is at Brunel University.

I found the information made available in this book very useful. The author has put in a good effort. Thanks.

A classic. Rigorous enough for an applied mathematician yet practical enough for an engineer. Worked-out exam,ples are very helpful. Recommended.

An excellent book, if you’re interested in finite difference methods for linear PDEs. I used an earlier edition as a textbook 30 years ago, and found it exceedingly useful. As the earlier reviewer states, the exposition is much closer to what you’d want if you were writing code, than what you’d want if you were proving theorems about stability and convergence. But the woods are full of books addressing the theoretical aspects. Books like this don’t show up very often.

I first used this book a long time ago (1988) when the third edition of it just came out, while I just got a chance to write a review on it much much years after that. It was a required graduate textbook at an Ivy League college. It discussed in depth the finite difference technique applied to the parabolic, elliptic, and hyperbolic types of PDEs. The thing that I really like about this book is, besides having not too much details on mathematical derivations, it gives examples on how to do the calculations by hand. Thus when one would like to "translate" all these calculations into a computer program one could easily test the results (or expected results). Of course there are a lot more books out there talking about finite difference technique but they are perhaps 20 bucks or more expensive than this book. The only minus about this book is it was printed in soft cover, even though mine is still in a very good condition after almost 16 years! I recommend this book for those beginners on finite difference method. I am currently using this book for one of my course.

Their Applications: An Introduction to Applied Mathematics (Texts in Applied Mathematics) (v. 11) Applied Partial Differential Equations: With Fourier Series and Boundary Value Problems, 4th Edition [Differential Equations, Dynamical Systems, and an Introduction to Chaos [DIFFERENTIAL EQUATIONS, DYNAMICAL SYSTEMS, AND AN INTRODUCTION TO CHAOS BY Hirsch, Morris W. (Author) Mar-26-2012] By Hirsch, Morris W. (Author) [2012) [Paperback] Student's Solutions Manual for Fundamentals of Differential Equations 8e and Fundamentals of Differential Equations and Boundary Value Problems 6e Fundamentals of Differential Equations (8th Edition) (Featured Titles for Differential Equations) Student Solutions Manual to accompany Boyce Elementary Differential Equations 10e & Elementary Differential Equations with Boundary Value Problems 10e Numerical Methods for Unconstrained Optimization and Nonlinear Equations (Classics in Applied Mathematics) Partial Differential Equations for Scientists and Engineers (Dover Books on Mathematics)