

An Introduction to Numerical Methods: A MATLAB Approach, Third Edition

By Abdelwahab Kharab, Ronald B. Guenther

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- A chapter on the numerical solution of integral equations
- A section on nonlinear partial differential equations (PDEs) in the last chapter
- Inclusion of MATLAB GUIs throughout the text

The book begins with simple theoretical and computational topics, including computer floating point arithmetic, errors, interval arithmetic, and the root of equations. After presenting direct and iterative methods for solving systems of linear equations, the authors discuss interpolation, spline functions, concepts of least-squares data fitting, and numerical optimization. They then focus on numerical differentiation and efficient integration techniques as well as a variety of numerical techniques for solving linear integral equations, ordinary differential equations, and boundary-value problems. The book concludes with numerical techniques for computing the eigenvalues and eigenvectors of a matrix and for solving PDEs.

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The accompanying CD-ROM contains simple MATLAB functions that help students understand how the methods work. These functions provide a clear, step-by-step explanation of the mechanism behind the algorithm of each numerical method and guide students through the calculations necessary to understand the algorithm.

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Editorial Review

Review

'Kharab and Guenther offer an attractive, clear, error-free, and well-written introduction to numerical methods. Highly recommended.' - "J. H. Ellison in CHOICE"

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