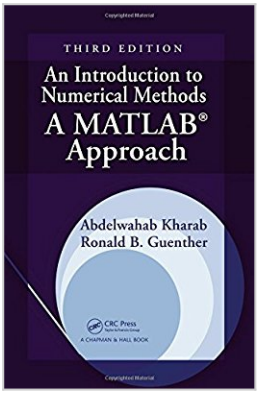

An Introduction to Numerical Methods: A MATLAB Approach, Third Edition

By Abdelwahab Kharab, Ronald B. Guenther

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Highly recommended by *CHOICE*, previous editions of this popular textbook offered an accessible and practical introduction to numerical analysis. **An Introduction to Numerical Methods: A MATLAB® Approach, Third Edition** continues to present a wide range of useful and important algorithms for scientific and engineering applications. The authors use MATLAB to illustrate each numerical method, providing full details of the computer results so that the main steps are easily visualized and interpreted.

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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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Written in an easy-to-follow, simple style, this text improves students' ability to master the theoretical and practical elements of the methods. Through this book,

they will be able to solve many numerical problems using MATLAB.

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Review

Praise for Previous Editions
Kharab and Guenther offer an attractive, clear, error-free, and well-written introduction to numerical methods … Highly recommended.
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About the Author

Abdelwahab Kharab is an associate professor in the College of Arts and Sciences at Abu Dhabi University. His research interests include numerical analysis and simulation for the numerical solution of partial differential equations that arise in science and engineering.

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