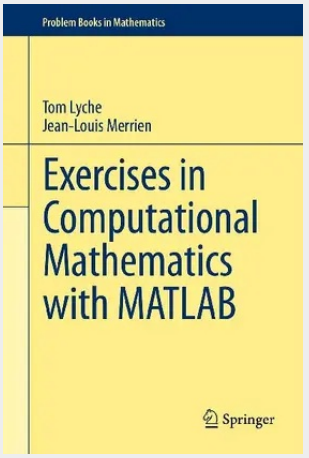
Lyche / Merrien

Exercises in Computational Mathematics with MATLAB



Designed to provide tools for independent study, this book contains student-tested mathematical exercises joined with MATLAB programming exercises.

Most chapters open with a review followed by theoretical and programming exercises, with detailed solutions provided for all problems including programs. Many of the MATLAB exercises are presented as Russian dolls: each question improves and completes the previous program and results are provided to validate the intermediate programs.

The book offers useful MATLAB commands, advice on tables, vectors, matrices and basic commands for plotting. It contains material on eigenvalues and eigenvectors and important norms of vectors and matrices including perturbation theory; iterative methods for solving nonlinear and linear equations; polynomial and piecewise polynomial interpolation; Bézier curves; approximations of functions and integrals and more. The last two chapters considers ordinary differential equations including two point boundary value problems, and deal with finite difference methods for some partial differential equations.

The format is designed to assist students working alone, with concise Review paragraphs, *Math Hint* footnotes on the mathematical aspects of a problem and *MATLAB Hint* footnotes with tips on programming.

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