

Outline

The following refers to the supplementary text: M.T. Heath (2002) *Scientific computing: an introductory survey*.

1. Floating point arithmetic, introduction to Matlab. Example: finding the root of a nonlinear equation. (Chapter 1, §5.5)
2. Basic numerical solution of linear systems of equations: LU factorization, sensitivity and conditioning, error bounds, computational complexity. (Chapter 2)
3. Iterative methods for solving linear systems: Jacobi, Gauss-Seidel, SOR. (§11.5)
4. Least squares problems: orthogonalization: singular value decomposition. (Chapter 3)
5. Eigenvalues and eigenvectors: power method, QR method. (Chapter 4)