Lists of topics For preliminary Exam on Numerical Analysis, May 2024


1. Foundation of Matrix Analysis (Sections 1.2-1.12)
2. Principles of Numerical Mathematics (Section 2.1-2.4)
3. Direct Methods for the Solution of Linear Systems (Sections 3.1-3.5)
4. Iterative Methods for Solving Linear Systems (Sections 4.1-4.3)
5. Approximation of Eigenvalues and Eigenvectors (Sections 5.1-5.3)
6. Rootfinding for Nonlinear Equations (Sections 6.1-6.3)
7. Polynomial Interpolation (Sections 8.1-8.4)
8. Numerical Integration (Sections 9.1-9.2)
9. Orthogonal Polynomials in Approximation Theory (Sections 10.1-10.4, 10.7-10.8)
10. Numerical Solution of Ordinary Differential Equations (Sections 11.1-11.6)