

Homework 3

Reading assignment: Sections 5.1, 5.2, 5.3, 11.1, 11.2 in the textbook.

Homework problems

1. Exercise T8.8. Solve the problem for $K = 5$ and interpolation conditions

$$f(1) = -1, \quad f(2) = 12, \quad f(3) = 10, \quad f(4) = 1, \quad f(5) = -3,$$

and plot the function $f(t)$. Use $\mathbf{x} = \mathbf{A} \backslash \mathbf{b}$ in MATLAB, Octave, or Julia to solve a square set of linear equations $Ax = b$.

2. Exercise T8.11. Solve the problem for

$$a_1 = \begin{bmatrix} -10 \\ 10 \\ 10 \end{bmatrix}, \quad a_2 = \begin{bmatrix} 0 \\ 10 \\ 0 \end{bmatrix}, \quad a_3 = \begin{bmatrix} -10 \\ 10 \\ 0 \end{bmatrix}, \quad a_4 = \begin{bmatrix} -20 \\ -10 \\ -10 \end{bmatrix}$$

and

$$\rho_1 = 17.7518, \quad \rho_2 = 9.6417, \quad \rho_3 = 14.3198, \quad \rho_4 = 24.9654.$$

3. Exercise A3.8.
4. Exercise A4.3.
5. Exercise A4.12.
6. Exercise A4.9.