Homework 3

Due: Tuesday 10/22/2019.

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
   \[ f(1) = 3, \quad f(2) = 5, \quad f(3) = 10, \quad f(4) = -2, \quad f(5) = -3, \]
   and plot the function $f(t)$.

2. Exercise A3.4.

3. 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
   \[
   \rho_1 = 17.7518, \quad \rho_2 = 9.6417, \quad \rho_3 = 14.3198, \quad \rho_4 = 24.9654.
   \]

4. Exercise A4.7. Solve the problem for
   \[
   c_1 = \begin{bmatrix} -10 \\ 10 \\ 10 \end{bmatrix}, \quad c_2 = \begin{bmatrix} 0 \\ 10 \\ 0 \end{bmatrix}, \quad c_3 = \begin{bmatrix} -10 \\ 10 \\ 0 \end{bmatrix}, \quad c_4 = \begin{bmatrix} -20 \\ -10 \\ -10 \end{bmatrix}, \quad c_5 = \begin{bmatrix} 0 \\ 10 \\ 20 \end{bmatrix}
   \]
   and
   \[
   \rho_1 = 17.7518, \quad \rho_2 = 9.6417, \quad \rho_3 = 14.3198, \quad \rho_4 = 24.9654, \quad \rho_5 = 22.6544.
   \]
   The first four points and measurements are the same as in the previous problem.

5. Exercise A4.10.

