# Task for lecture 1

Consider the equation

$$\mathbf{A} \cdot \mathbf{x} = \mathbf{b} \tag{1}$$

where

$$\mathbf{A} = \begin{bmatrix} 1 & 2 & 3 \\ 2 & -4 & 6 \\ 3 & -9 & -3. \end{bmatrix}$$

and

$$\mathbf{b} = \begin{bmatrix} 5 \\ 18 \\ 6 \end{bmatrix}$$

1. Solve Equation (1) using the LU decomposition (using the source code from NR3). That is, find $\mathbf{x}$ in Equation (1) and verify that it is correct. *Hint:* If you are struggling, you should download the "Lecture1.cpp" to get a starting point.

2. Print the solutions and relevant information from the calculations. *Hint:* If you are struggling, you may download and include the "utilities.h" header file.