1. Solve the BVP $x'' + 9x = \sin(t)$ with $x'(0) = 1, x'(\pi/2) = 1$ using Finite Difference Method (FDM) to get a second order accuracy.

2. Write two functions `Lsolve(A,b)` and `Usolve(A,b)` to use forward and backward substitution respectively for solving $Ax = b$ and $A^T x = b$, where

$$A = \begin{pmatrix} 1 & 0 & 0 \\ 22 & 12 & 0 \\ 3 & 2 & 10 \end{pmatrix}, \quad b = \begin{pmatrix} 1 \\ 22 \\ 3 \end{pmatrix}$$

3. Use MATLAB `lu` function to decompose the matrix M and use the above `Lsolve` and `Usolve` functions to solve $Mx = b$, where

$$M = \begin{pmatrix} 1 & 3 & -2 \\ 12 & 22 & -6 \\ 3 & 2 & 10 \end{pmatrix}, \quad b = \begin{pmatrix} 10 \\ 20 \\ 30 \end{pmatrix}$$