

# ASSIGNMENT 4

Due March 3, 2005 (before start of class)

## Problem 5

Our website has two functions that solve a linear lower triangular system using forward substitution, one uses row access and the other column access. The website also has a function that solves a linear upper triangular system using backward substitution and column access. For this assignment, write a MATLAB function that solves a linear upper triangular system using backward substitution and row access. Write a script program to set up an upper triangular matrix  $\mathbf{U}$  and a vector  $\mathbf{b}$  and call your function to solve the linear system  $\mathbf{U}\mathbf{x} = \mathbf{b}$ . Use the same  $3 \times 3$  system as we have before

$$\begin{bmatrix} 1 & 2 & 2 \\ 0 & -4 & -6 \\ 0 & 0 & -1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 3 \\ -6 \\ 1 \end{bmatrix}$$

Check your solution with the solution obtained using MATLAB's backslash operator. Name your function file and script file as we have done before in assignment 2.