SCS2211

Lab sheet 4-Questions

1. Find x and y using octave for the following linear equations.
   - X+2y=10

     2x-y=5
   - 3x+3y=9
     X+2y=8

2. Compute the LU decomposition of following matrices.
   - a = [1, 2; 3, 4]
   - b=[2, 4 ;3, 5]

3. Find the best (least-squares sense) second-order polynomial that fits the points (-1, 0), (0, 1), and (1, 4).

4. Evaluate $y=3x^2+1$ for x=-5:0.1:5
   (i)Add random noise to these samples. Use randn. Put the noisy signal with. markers.
   (ii)Fit a second degree polynomial to the noisy data.
   (iii)Plot the fitted polynomial on the same plot using the same x values and red line.

5. Write a separate function to find the maximum value and the minimum value of given two numbers.

6. Solving this in Octave is a case of turning the equations into matrix-vector form and then using the inverse of A to find the solution:
   x + y = 3
   2x − 3y = 5

7. Solve the Equation use your Octave knowledge
   a) u + v + w = 2
      2u + 3w = 5
      3u + v + 4w = 6

   b) 2x − y = 2
      x + y = 5
      6x − y = −5

8. Use your polynomial knowledge and solve this equation
   $x^5 + 2x^4 - 5x^3 + x + 3 = 0$