Assignment 0

1. Let $f(x) = ax^2 + bx + c$ be a quadratic equation. Determine the values of $a$, $b$, and $c$ if $f(0) = 3$, $f(1) = 4$, and $f(-1) = 2$.

2. Solve the system of linear equations:
   \[ \begin{align*}
   2x + 3y &= 11 \\
   x - 2y &= -3
   \end{align*} \]

3. Compute the determinant of the matrix:
   \[ \begin{pmatrix}
   2 & 3 \\
   4 & 5
   \end{pmatrix} \]

4. For the given matrix, solve system of linear equations:
   \[ \begin{pmatrix}
   1 & 2 \\
   3 & 4
   \end{pmatrix} \begin{pmatrix}
   x \\
   y
   \end{pmatrix} = \begin{pmatrix}
   5 \\
   6
   \end{pmatrix} \]

5. Solve the following system of linear equations:
   \[ \begin{align*}
   x + 2y &= 5 \\
   3x - y &= 2
   \end{align*} \]

6. What is the statement of the equation $f(x) = x^3 - 2x^2 + x - 2$? Provide the zeroes of the equation.

7. For what value of $a$, does the system have a unique solution?
   \[ \begin{pmatrix}
   2a & 3 \\
   4 & 5
   \end{pmatrix} \begin{pmatrix}
   x \\
   y
   \end{pmatrix} = \begin{pmatrix}
   5 \\
   6
   \end{pmatrix} \]

The solution to the system is unique if and only if $a 
eq \frac{3}{2}$.