Student Name: Daytime: ☐   Evening: ☐
Student No :

(25)1- Assume that the following system of equations is given. Find x_1, x_2, and x_3.

$$\begin{bmatrix} 2 & 3 & 5 \\ 0 & 4 & 1 \\ 0 & 0 & 3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \\ x_3 \end{bmatrix} = \begin{bmatrix} 0 \\ 11 \\ -3 \end{bmatrix}$$

(25)2- Basic Gauss elimination method will fail for the following system of equations. Why does it fail? How do you rearrange the equations to solve it using basic Gauss elimination method?

$$\begin{bmatrix} 0 & 1 \\ 1 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \end{bmatrix}$$

(25)3-Find a ring on the complex plane that contains all nonzero zeros of $p(x)=3z^5-32z^4+140z^3-315z^2+365z-174$ (Let z_i be zero of $p(x)$. You must find ρ_1 and ρ_2 such that $\rho_1 < z_i < \rho_2$ for $1 \le i \le 5$)

(25)4-Find the Taylor expension of the polynomial $p(x)=3z^5-32z^4+140z^3-315z^2+365z-174$ about the point $z_0=2$ using Horner's algorithm.