Assignment 8
CS374

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Contents

1 Gaussian Elimination Method

$$\begin{aligned} x_1 + 2x_2 + x_3 &= 0 \\ 2x_1 + 2x_2 + 3x_3 &= 0 \\ -x_1 - 3x_2 &= 0 \end{aligned}$$

Roots of the equation are :

$$\begin{aligned} x_1 &= 1 \\ x_2 &= -1 \\ x_3 &= 1 \end{aligned}$$

2 Gaussian Elimination method

$$\begin{aligned} 4x_1 + 3x_2 + 2x_3 + x_4 &= 1 \\ 3x_1 + 4x_2 + 3x_3 + 2x_4 &= 1 \\ 2x_1 + 3x_2 + 4x_3 + 3x_4 &= -1 \\ x_1 + 2x_2 + 3x_3 + 4x_4 &= -1 \end{aligned}$$

Roots of the equation are :

$$\begin{aligned} x_1 &= 0 \\ x_2 &= 1 \\ x_3 &= -1 \\ x_4 &= 0 \end{aligned}$$

3 Inverse of matrix

$$M = \begin{bmatrix} 1 & 1 & -1 \\ 1 & 2 & -2 \\ -2 & 1 & 1 \end{bmatrix} \tag{1}$$

$$M^{-1} = \begin{bmatrix} 2 & -1 & 0 \\ \frac{3}{2} & -\frac{1}{2} & \frac{3}{2} \\ \frac{5}{2} & -\frac{3}{2} & \frac{1}{2} \end{bmatrix} \tag{2}$$