National University of Computer and Emerging Sciences

LINEAR ALGEBRA – CS, Fall 2015

Mid-term # 1

Roll# L12-4129 Section_____ Name_____ Date Sept 15, 2015

Time: 90 mints Max Marks: 30

Q#1[10] Solve the system by using Gaussian Elimination method

$$\begin{aligned} 3x_1 + 9x_2 - 7x_3 - 2x_4 + 6x_5 - 3x_6 &= -1 \\ 6x_1 + 18x_2 - 15x_3 - 6x_4 + 12x_5 - 9x_6 &= -3 \\ -10x_3 - 20x_4 - 30x_6 &= -10 \\ 2x_1 + 6x_2 + 8x_4 + 4x_5 + 18x_6 &= 6 \end{aligned}$$

Q#2[10] Solve the given matrix equation for X.

$$\begin{bmatrix} 1 & 2 & 3 \\ 3 & 7 & 6 \\ 1 & 0 & 8 \end{bmatrix} X = \begin{bmatrix} 1 & 4 & -20 & 3 \\ 0 & -1 & 5 & 2 & 7 \\ -3 & 6 & 8 & 9 & 0 \end{bmatrix}$$

Pg 66. (Q 19)

Q#3[10] Prove that

Pg 105 Q 29

$$\begin{vmatrix} 1 & 1 & 1 \\ a & b & c \\ a^2 & b^2 & c^2 \end{vmatrix} = (b-a)(c-a)(c-b)$$