KING SAUD UNIVERSITY

M - 107 DEPARTMENT OF MATHEMATICS

(SEMESTER II, 1432-1433) FIRST MID-TERM

FULL MARKS: 40

TIME: 90min

Question: 1. Let

$$\begin{aligned} 2x-4y+5z &= 0 \\ -3x+2y-3z &= 0 \\ -x-2y+2z &= 0 \end{aligned}$$

Use Gauss- Jordan method to find x, y *and* z. **[10]**

Question: 2.(a) What conditions must a, b, and c satisfy in order for the system of equation

$$\begin{aligned} x+y+2z &= a \\ x+z &= b \\ 2x+y+3z &= c \end{aligned}$$

to be consistent. [6]

(b) Evaluate the determinant by using elementary row operations

$$|A| = \begin{vmatrix} 1 & 2 & 2 & 1 \\ 0 & 1 & 0 & 2 \\ 2 & 0 & 1 & 1 \\ 0 & 2 & 0 & 1 \end{vmatrix}$$

[6]

Question: 3.

If $A = \begin{bmatrix} 1 & 1 & -1 \\ 1 & 1 & 1 \\ 1 & -1 & -1 \end{bmatrix}$, **find** A^{-1} **by using Elementary matrix method. [8]**

Question: 4. Given

$$\begin{aligned} x-y+2z &= 2 \\ 2y-3z &= 3 \\ 3x-2y+4z &= 1 \end{aligned}$$

i. **Use method of cofactors to find** A^{-1}, **where A is coefficient matrix, and**

ii. **Use** A^{-1} **to solve the given system [10]**