بسم اللّه الرَّحمَن الرَّحِيم

Kingdom of Saudi Arabia
Ministry of Higher Education
Al-Imam Mohammed Bin
Saud Islamic University

College: Science
Department: Mathematics & Statistics
Course Name: Linear Agebra & ODEs.

المَملَكَة العَرَبِية السَعُودِية
وزَارَة التَّعلِيم العَالِي
جَامِعَة الإِمَام مُحَمَّد بن
سَعُود الإِسلَامِية

Duration: 75 Minutes
Course Code: MAT 227
Semester/Year: 2nd/1435-36

Mid Term 1

Q 1 [5 Marks] Solve by Gauss-Jordan method.

$$\begin{aligned} x_1 - 2x_2 - 6x_3 &= -17 \\ 2x_1 - 6x_2 - 16x_3 &= -46 \\ x_1 + 2x_2 - x_3 &= -5. \end{aligned}$$

Q 2. [7 Marks] Determine A^{-1}, if A $= \begin{bmatrix} 1 & 2 & -1 \\ 2 & 4 & -3 \\ 1 & -2 & 0 \end{bmatrix}$

Q 3. [3 Marks] Evaluate $|A|$, if $A = \begin{bmatrix} 1 & -2 & 3 & 0 \\ 4 & 0 & 5 & 0 \\ 7 & -3 & 8 & 4 \\ -3 & 0 & 4 & 0 \end{bmatrix}$

Q.4 [5 Marks] Answer the following as True or False. Give reason if it is false.

(a) $(cA)^t = \frac{1}{c}A^t$
(b) $|A^t| \neq |A|$
(c) $(cA)^{-1} = cA^{-1}$
(d) $|A^{-1}| = \frac{1}{|A|}$
(e) The $n \times n$ system $AX = B$ has unique solution if $|A| = 0$.

GOOD LUCK