King Fahd University of Petroleum and Minerals

Prep-Year Math Program

Math 002 - Term 142

Recitation (9.8)

Question 1: If $A=\begin{bmatrix}1 & 1 & 4\\ 2 & 3 & 6\\ -1 & -1 & 2\end{bmatrix}$ such that $AB=BA=I_3$, then find the matrix B.

Answer: $B=A^{-1}=\begin{bmatrix}2 & -1 & -1\\ -\frac{5}{3} & 1 & \frac{1}{3}\\ \frac{1}{6} & 0 & \frac{1}{6}\end{bmatrix}$

Question 2:

If A is 3×3 matrix such that $|A|=-2$ and A^{-1} exists, then find $\left|2A^{-1}\right|$.

Answer: $\left|2A^{-1}\right|=-4$

Question 3

If $A^{-1}=\begin{bmatrix}x & -1 & -1\\ -3 & 1/2 & y\\ -1 & z & 1/2\end{bmatrix}$ is the inverse matrix of $A=\begin{bmatrix}1 & 0 & 2\\ 0 & -1 & 3\\ 2 & 1 & 3\end{bmatrix}$ then $x+2y-4z=$

Answer: $x+2y-4z=4$

Question 4 Given the matrices $M^{-1}=\begin{bmatrix}2 & 7\\ 1 & 4\end{bmatrix}$ and $N^{-1}=\begin{bmatrix}1 & 2\\ -2 & -3\end{bmatrix}$, then find the sum of elements in 2^{nd} row of $(MN)^{-1}$

Answer: -33

Question5: The solution of the system $\begin{cases}3x+5y=-10\\ -2x-4y=6\end{cases}$ can be given by

A) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}4 & 5\\ -2 & -3\end{bmatrix}\begin{bmatrix}-5\\ 3\end{bmatrix}$

B) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}4 & 5\\ -2 & -3\end{bmatrix}\begin{bmatrix}-10\\ 6\end{bmatrix}$

C) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}-4 & -5\\ 2 & 3\end{bmatrix}\begin{bmatrix}-5\\ 3\end{bmatrix}$

D) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}5 & 4\\ -2 & -3\end{bmatrix}\begin{bmatrix}-10\\ 6\end{bmatrix}$

E) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}-2 & -3\\ 4 & 5\end{bmatrix}\begin{bmatrix}-5\\ 3\end{bmatrix}$