11.3: (INVERSES OF MATRICES AND MATRIX EQUATIONS)

If A, B and C are $n \times n$ matrices and I_n is the identity matrix of order n then which of the following statements is TRUE? A) $(A+B)(A^2-AB+B^2)=A^3+B^3$ B) $(A+I_n)(A-I_n)=A^2-I_n^2$ C) $A^2C=ACA$ D) $(A-B)^2=A^2-2AB+B^2$ E) $(A+I_n)^2=A^2+I_n$.	Identity Matrix.
If $A=\begin{bmatrix}1 & 3 & 3\\ 1 & 4 & 3\\ 1 & 3 & 4\end{bmatrix}$, then the sum of the elements in the first column of A^{-1} is equal to A) 5 B) 1 C) -2 D) 0 E) 3	Inverse Matrix.
If $X^{-1}=\begin{bmatrix}1 & -2 & 0\\ 0 & 1 & 1\\ 0 & 0 & 2\end{bmatrix}$, then the sum of elements in the 3^{rd} column of X is A) -1 B) 0 C) $-\frac{1}{2}$ D) $\frac{1}{2}$ E) $\frac{3}{2}$	Inverse Matrix.

If $A = \begin{bmatrix} 3 & -5 \\ 1 & -1 \end{bmatrix}$, $B = \begin{bmatrix} 2 & -4 \\ 4 & -6 \end{bmatrix}$ and $C = A^{-1}B$ then the sum of all elements of matrix C is A) -6 B) $-\frac{19}{2}$ C) -10 D) 12 E) $\frac{9}{2}$	Inverse Matrix.
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 the sum of elements in the 1st row of $(MN)^{-1}$ is A) 19 B) -34 C) -22 D) -11 E) -3	Inverse Matrix.
If the inverse of the matrix $A = \begin{bmatrix} 1 & 2 & -1 \\ 2 & 3 & -1 \\ 3 & 6 & -n \end{bmatrix}$ is $A^{-1} = \begin{bmatrix} 0 & 2 & m \\ -1 & -1 & 1 \\ -3 & 0 & 1 \end{bmatrix}$, then the sum of m and n is A) 1 B) -1 C) -4 D) -3 E) 2	Inverse Matrix.

The system $\begin{cases} 3x - 5y = -18 \\ 2x - 3y = -9 \end{cases}$, has the solution in the form a) $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 9 & -15 \\ 6 & -9 \end{bmatrix} \begin{bmatrix} 6 \\ 3 \end{bmatrix}$ b) $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 & 5 \\ 2 & 3 \end{bmatrix} \begin{bmatrix} -8 \\ -9 \end{bmatrix}$ c) $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -5 & 3 \\ -3 & 2 \end{bmatrix} \begin{bmatrix} -18 \\ -9 \end{bmatrix}$ d) $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -15 & 9 \\ -9 & 6 \end{bmatrix} \begin{bmatrix} 6 \\ 3 \end{bmatrix}$ e) $\begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 3 & 5 \\ 3 & 2 \end{bmatrix} \begin{bmatrix} -18 \\ -9 \end{bmatrix}$	Inverse Matrix.
If $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}, BA = \begin{bmatrix} -1 & 2 \\ 4 & 3 \end{bmatrix}$, then the sum of all the elements of matrix B is equal to: A) 1 B) -4 C) 3 D) 2 E) -2	Inverse Matrix.

If $A=\begin{bmatrix}2 & -5\\ 3 & -6\end{bmatrix}, B=\begin{bmatrix}15\\ 36\end{bmatrix}$ and $X=\begin{bmatrix}x\\ y\end{bmatrix}$, then the matrix solution of the system $AX=B$, is given by A) $X=\begin{bmatrix}-6 & 5\\ -3 & 2\end{bmatrix}\begin{bmatrix}5\\ 12\end{bmatrix}$ C) $X=\begin{bmatrix}2 & -5/3\\ 1 & -2/3\end{bmatrix}\begin{bmatrix}-6\\ 15\end{bmatrix}$ D) $X=\begin{bmatrix}2 & 5/3\\ -1 & -2/3\end{bmatrix}\begin{bmatrix}15\\ 36\end{bmatrix}$ E) $X=\begin{bmatrix}-2 & 5/3\\ 1 & -2/3\end{bmatrix}\begin{bmatrix}15\\ 36\end{bmatrix}$	Inverse Matrix.
The linear system $\begin{bmatrix}2 & 1 & 1\\ -1 & 3 & 2\\ 2 & 1 & 1\end{bmatrix}\begin{bmatrix}a\\ b\\ c\end{bmatrix}=2\begin{bmatrix}9\\ 5\\ -11\end{bmatrix}$ has A) infinitely many solutions B) no solution C) a unique solution $(-3,-12,-4)$ D) a unique solution $(1,2,2)$ E) a unique solution $(5,4,4)$	Inverse Matrix.
The solution of the system $\begin{matrix}3x+5y & =-10\\ -2x-4y & =6\end{matrix}$ 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) $\begin{bmatrix}x\\ y\end{bmatrix}=\begin{bmatrix}-2 & -3\\ 4 & 5\end{bmatrix}\begin{bmatrix}-5\\ 3\end{bmatrix}$	Inverse Matrix.

If $A = \begin{bmatrix} 1 & 0 & -1 \\ 0 & 2 & 4 \\ -1 & 0 & 2 \end{bmatrix}$, then the sum of all the elements in the second row of A^{-1} is equal to

A) $-\frac{7}{2}$

B) $\frac{3}{2}$

C) $\frac{1}{2}$

D) 0

E) 2

Inverse Matrix.