11.2: (THE ALGEBRA OF MATRICES)

If $C = \begin{bmatrix} -1 & 3 \\ 2 & 1 \\ -3 & -2 \end{bmatrix}$ and $D = \begin{bmatrix} 0 & -1 & 2 \\ 1 & 2 & -4 \end{bmatrix}$, then the sum of all elements of $CD - I$, is A) -4 B) -14 C) -7 D) 13 E) 17	The Algebra of Matrices.
$A = \begin{bmatrix} 1 & -2 & 0 \\ 3 & 0 & -1 \\ 1 & 1 & 4 \end{bmatrix}$. The element in the third row and second column of the matrix $A^2 + 3A$ is A) 5 B) -2 C) 0 D) -1 E) 7	The Algebra of Matrices.

Let A be a (3×4) matrix and B be a (4×3) matrix. Then which one of the following expressions is possible to find? A) $A(BA)$ B) $A + B$ C) B^{-1} D) A^{-1} E) $A(AB)$	The Algebra of Matrices.
If $A = \begin{bmatrix} 0 & -2 & 7 \\ 5 & 4 & 3 \end{bmatrix}, B = \begin{bmatrix} 3 & 1 \\ -1 & 5 \\ 6 & 0 \end{bmatrix}, C = \begin{bmatrix} 40 & -10 \\ 28 & 23 \end{bmatrix}$, and $D = AB - C$, then the element in the second row and second column of the matrix D is equal to (a) 2 (b) 48 (c) 0 (d) 28 (e) -10	The Algebra of Matrices.
If A, B, and C are matrices each of order $n \times n$, then which one of the following is TRUE? (a) $(AB)C = A(BC)$ (b) $(A + B)^2 = A^2 + 2AB + B^2$ (c) $(A + B) \cdot C = A + (B \cdot C)$ (d) $C(AB) + C(BA) = 2C(AB)$ (e) $(A - B)(A + B) = A^2 - B^2$	The Algebra of Matrices.

If X is a 3×3 matrix, I is the 3×3 identity matrix, and $A = \begin{bmatrix} 1 & 4 & 7 \\ 2 & 5 & 8 \\ 3 & 6 & 9 \end{bmatrix}$ such that $2(X - A) = X - 3I$, then the sum of all elements in the second row of matrix X is A) 27 B) 18 C) 24 D) 31 E) 30	The Algebra of Matrices.
If $A = \begin{bmatrix} 2 & -1 & 3 \\ 4 & 0 & 1 \end{bmatrix}$ and $B = \begin{bmatrix} 1 & -1 \\ 0 & 3 \\ 2 & 1 \end{bmatrix}$, then the sum of all the elements of the matrix $AB =$ A) 9 B) 14 C) -5 D) 5 E) 3	Matrix Multiplication.
If $A = \begin{bmatrix} 1 & 2 & -5 \\ 2 & 4 & 3 \\ 3 & -1 & -2 \end{bmatrix}$, then the element in the second row and third column of A^2 is equal to: A) -4 B) 4 C) -5 D) 11 E) 19	Matrix Multiplication.

If $A = \begin{bmatrix} -5 & 4 & 1 \\ -5 & 7 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} -8 & 6 & -4 \\ -1 & 5 & -3 \\ -7 & 5 & -1 \end{bmatrix}$, then the sum of all the elements of the third column of the matrix AB is A) 4 B) 10 C) -6 D) 0 E) -3	Matrix Multiplication.
If $A = \begin{pmatrix} 2 & 0 & -2 \\ 3 & -1 & 0 \end{pmatrix}$ and $B = \begin{pmatrix} 5 & 2 & -1 \\ 0 & -3 & 1 \\ -2 & 6 & 0 \end{pmatrix}$ then the element in the second row and third column of the matrix AB is A) 0 B) 2 C) -4 D) -2 E) 10	Matrix Multiplication.
If $\begin{bmatrix} x+2 & 8 & -3 \\ 1 & 2y & 2x+1 \\ 7 & -2 & y+2 \end{bmatrix} = \begin{bmatrix} 2x+6 & 8 & -3 \\ 1 & 18 & -7 \\ 7 & -2 & 11 \end{bmatrix}$, then $x + y =$ A) -13 B) -5 C) 5 D) 4 E) 13	The Algebra of Matrices.

If $A = \begin{bmatrix} 2 & -1 & -2 & 5 \\ 3 & 0 & 1 & 4 \end{bmatrix}, B = \begin{bmatrix} -6 & 3 & 1 & 0 \\ 3 & 2 & 7 & 4 \end{bmatrix}$ and $3A + 5X = 3X + B$, then $X =$ a) $\begin{bmatrix} -6 & 3 & \frac{7}{2} & \frac{15}{2} \\ -3 & 1 & 2 & -4 \end{bmatrix}$ b) $\begin{bmatrix} -4 & 2 & -1 & 3 \\ 6 & 2 & 8 & 8 \end{bmatrix}$ c) $\begin{bmatrix} 0 & 0 & -5 & 13 \\ 12 & 2 & 10 & 16 \end{bmatrix}$ d) $\begin{bmatrix} 0 & 0 & -\frac{5}{2} & \frac{15}{2} \\ 6 & 1 & 5 & 8 \end{bmatrix}$ e) $\begin{bmatrix} -12 & 6 & 7 & -15 \\ -6 & 2 & 4 & -8 \end{bmatrix}$	The Algebra of Matrices.
If $C = BA$ where $A = \begin{bmatrix} 0 & 1 & 2 & 3 \\ 4 & 5 & 6 & 7 \\ 8 & 9 & 10 & 11 \end{bmatrix}$ and $B = \begin{bmatrix} -1 & 0 & -2 \\ -3 & 4 & -5 \\ -6 & 7 & -8 \\ -9 & 10 & -11 \end{bmatrix}$ then c_{23}, the element in the second row and third column of C is equal to A) 32 B) -32 C) 158 D) -158 E) 116	The Algebra of Matrices.

Given that $A = \begin{pmatrix} 1 & 0 \\ 2 & 1 \end{pmatrix}, B = \begin{pmatrix} 2 & 0 \\ x & 1 \end{pmatrix}, C = \begin{pmatrix} 0 & 0 \\ 6 & 1 \end{pmatrix}$. If $AB = 2A^2 - C$, then $x =$ A) -4 B) 4 C) 0 D) 2 E) -2	The Algebra of Matrices.