EduSahara™ Learning Center Assignment

Grade : Class X, ICSE
Chapter : Matrices
Name : Matrix Addition and Subtraction Concepts

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1. Matrix A = $\begin{bmatrix} -3 & -4 & 4 \\ -3 & -4 & -4 \\ 3 & 3 & 1 \end{bmatrix}$ is the additive inverse of

(i) $\begin{bmatrix} 3 & 4 & -4 \\ 3 & 4 & 2 \\ -3 & -3 & -1 \end{bmatrix}$ (ii) $\begin{bmatrix} 3 & 4 & -4 \\ 3 & 4 & 4 \\ -3 & -3 & -2 \end{bmatrix}$ (iii) $\begin{bmatrix} 3 & 4 & -4 \\ 3 & 4 & 4 \\ -3 & -3 & -1 \end{bmatrix}$

(iv) $\begin{bmatrix} 3 & 6 & -4 \\ 3 & 4 & 4 \\ -3 & -3 & -1 \end{bmatrix}$ (v) $\begin{bmatrix} 3 & 4 & -3 \\ 3 & 4 & 4 \\ -3 & -3 & -1 \end{bmatrix}$

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2. If the elements of matrix A are multiplied with -1 , we get
   (i) additive identity of A
   (ii) additive inverse of A
   (iii) multiplicative identity of A
   (iv) multiplicative inverse of A

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3. If the elements of matrix A are multiplied with 0 , we get
   (i) multiplicative identity of A
   (ii) additive identity of A
   (iii) multiplicative inverse of A
   (iv) additive inverse of A

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4. A 2×4 matrix has
   a) 2 rows and 8 columns
   b) 6 rows and 4 columns
   c) 4 rows and 2 columns
   d) 2 rows and 4 columns

   (i) {d} (ii) {b,d} (iii) {a,d} (iv) {c,a,d}

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5. Which of the following are true for matrices A and B ?
   a) If A and B can be multiplied, they must have the same order
   b) If AB = 0, A = 0 or B = 0 or both A and B are zero matrices
   c) If A and B can be added, they must have the same order

d) The orders of (A × B) and (B × A) are same

(i) {b,c} (ii) {a,c} (iii) {c} (iv) {d,a,c}

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6. If (A + B) = 0, then

a) B is the additive identity of A
b) A is the additive identity of B
c) B is the additive inverse of A
d) A is the additive inverse of B

(i) {a,d,c} (ii) {a,b,c} (iii) {a,c} (iv) {b,d} (v) {c,d}

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7. Which of the following are true ?

a) The order of (A × B) and (B × A) is same

b) If AB = 0, then A = 0 or B = 0 or both A & B are 0

c) If matrices A & B can be multiplied, they must have the same order

d) If matrices A & B can be added, they must have the same order

(i) {c,a,d} (ii) {d} (iii) {a,d} (iv) {b,d}

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8. If $A = \begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ and $B = \begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix}$,

then (A + B) =

(i) $\begin{bmatrix} a_{11}b_{11} + a_{12}b_{21} & a_{11}b_{12} + a_{12}b_{22} \\ a_{21}b_{11} + a_{22}b_{21} & a_{21}b_{12} + a_{22}b_{22} \end{bmatrix}$

(ii) $\begin{bmatrix} a_{11} + b_{11} & a_{21} + b_{12} \\ a_{12} + b_{21} & a_{22} + b_{22} \end{bmatrix}$

(iii) $\begin{bmatrix} a_{11} + b_{11} & a_{21} + b_{21} \\ a_{12} + b_{12} & a_{22} + b_{22} \end{bmatrix}$

(iv) $\begin{bmatrix} a_{11} + b_{11} & a_{12} + b_{12} \\ a_{21} + b_{21} & a_{22} + b_{22} \end{bmatrix}$

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9. If $A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \end{bmatrix}$ and $B = \begin{bmatrix} b_{11} & b_{12} & b_{13} \end{bmatrix}$,

$$\begin{matrix} a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{matrix} \qquad \begin{matrix} b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{matrix}$$

then (A + B) =

(i) $\begin{bmatrix} a_{11}+b_{11} & a_{21}+b_{21} & a_{31}+b_{31} \\ a_{12}+b_{12} & a_{22}+b_{22} & a_{32}+b_{32} \\ a_{13}+b_{13} & a_{23}+b_{23} & a_{33}+b_{33} \end{bmatrix}$

(ii) $\begin{bmatrix} a_{11}+b_{11} & a_{21}+b_{12} & a_{31}+b_{13} \\ a_{12}+b_{21} & a_{22}+b_{22} & a_{32}+b_{23} \\ a_{13}+b_{31} & a_{23}+b_{32} & a_{33}+b_{33} \end{bmatrix}$

(iii) $\begin{bmatrix} a_{11}+b_{11} & a_{12}+b_{12} & a_{13}+b_{13} \\ a_{21}+b_{21} & a_{22}+b_{22} & a_{23}+b_{23} \\ a_{31}+b_{31} & a_{32}+b_{32} & a_{33}+b_{33} \end{bmatrix}$

(iv) $\begin{bmatrix} a_{11}b_{11}+a_{12}b_{21}+a_{13}b_{31} & a_{11}b_{12}+a_{12}b_{22}+a_{13}b_{32} & a_{11}b_{13}+a_{12}b_{23}+a_{13}b_{33} \\ a_{21}b_{11}+a_{22}b_{21}+a_{23}b_{31} & a_{21}b_{12}+a_{22}b_{22}+a_{23}b_{32} & a_{21}b_{13}+a_{22}b_{23}+a_{23}b_{33} \\ a_{31}b_{11}+a_{32}b_{21}+a_{33}b_{31} & a_{31}b_{12}+a_{32}b_{22}+a_{33}b_{32} & a_{31}b_{13}+a_{32}b_{23}+a_{33}b_{33} \end{bmatrix}$

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10. If A = $\begin{bmatrix} a_{11} & a_{12} \\ a_{21} & a_{22} \end{bmatrix}$ and B = $\begin{bmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{bmatrix}$,

then (A − B) =

(i) $\begin{bmatrix} a_{11}-b_{11} & a_{21}-b_{12} \\ a_{12}-b_{21} & a_{22}-b_{22} \end{bmatrix}$

(ii) $\begin{bmatrix} a_{11}b_{11}+a_{12}b_{21} & a_{11}b_{12}+a_{12}b_{22} \end{bmatrix}$

$a \quad b \quad + a \quad b \qquad a \quad b \quad + a \quad b$

$21\ 11 \quad 22\ 21 \quad 21\ 12 \quad 22\ 22$

(iii) $\begin{bmatrix} a_{11} - b_{11} & a_{12} - b_{12} \\ a_{21} - b_{21} & a_{22} - b_{22} \end{bmatrix}$

(iv) $\begin{bmatrix} a_{11} - b_{11} & a_{21} - b_{21} \\ a_{12} - b_{12} & a_{22} - b_{22} \end{bmatrix}$

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11. If $A = \begin{bmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{bmatrix}$ and $B = \begin{bmatrix} b_{11} & b_{12} & b_{13} \\ b_{21} & b_{22} & b_{23} \\ b_{31} & b_{32} & b_{33} \end{bmatrix}$,

then $(A - B) =$

(i) $\begin{bmatrix} a_{11}b_{11} + a_{12}b_{21} + a_{13}b_{31} & a_{11}b_{12} + a_{12}b_{22} + a_{13}b_{32} & a_{11}b_{13} + a_{12}b_{23} + a_{13}b_{33} \\ a_{21}b_{11} + a_{22}b_{21} + a_{23}b_{31} & a_{21}b_{12} + a_{22}b_{22} + a_{23}b_{32} & a_{21}b_{13} + a_{22}b_{23} + a_{23}b_{33} \\ a_{31}b_{11} + a_{32}b_{21} + a_{33}b_{31} & a_{31}b_{12} + a_{32}b_{22} + a_{33}b_{32} & a_{31}b_{13} + a_{32}b_{23} + a_{33}b_{33} \end{bmatrix}$

(ii) $\begin{bmatrix} a_{11} - b_{11} & a_{21} - b_{21} & a_{31} - b_{31} \\ a_{12} - b_{12} & a_{22} - b_{22} & a_{32} - b_{32} \\ a_{13} - b_{13} & a_{23} - b_{23} & a_{33} - b_{33} \end{bmatrix}$

(iii) $\begin{bmatrix} a_{11} - b_{11} & a_{21} - b_{12} & a_{31} - b_{13} \\ a_{12} - b_{21} & a_{22} - b_{22} & a_{32} - b_{23} \\ a_{13} - b_{31} & a_{23} - b_{32} & a_{33} - b_{33} \end{bmatrix}$

(iv) $\begin{bmatrix} a_{11} - b_{11} & a_{12} - b_{12} & a_{13} - b_{13} \\ a_{21} - b_{21} & a_{22} - b_{22} & a_{23} - b_{23} \\ a_{31} - b_{31} & a_{32} - b_{32} & a_{33} - b_{33} \end{bmatrix}$

12.

Which of the following matrices is comparable to the

given matrix $\begin{bmatrix} 2 & 7 & 5 \\ 2 & 7 & 2 \\ 3 & 6 & 1 \end{bmatrix}$?

(i) $\begin{bmatrix} 6 & 2 & 4 & 6 \\ 5 & 5 & 5 & 8 \\ 8 & 7 & 5 & 7 \end{bmatrix}$ (ii) $\begin{bmatrix} 8 & 4 & 6 \\ 6 & 8 & 9 \\ 7 & 7 & 6 \end{bmatrix}$ (iii) $\begin{bmatrix} 1 & 8 & 3 & 1 \\ 7 & 5 & 4 & 1 \\ 1 & 2 & 7 & 7 \\ 5 & 2 & 6 & 8 \\ 7 & 8 & 1 & 2 \end{bmatrix}$

(iv) $\begin{bmatrix} 7 & 9 & 8 \\ 9 & 4 & 3 \\ 4 & 6 & 9 \\ 9 & 4 & 7 \end{bmatrix}$ (v) $\begin{bmatrix} 4 & 5 & 3 \\ 9 & 6 & 9 \end{bmatrix}$

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13. Which of the following matrices can be added to $\begin{bmatrix} 6 & 4 \\ 6 & 1 \end{bmatrix}$?

(i) $\begin{bmatrix} 8 & 3 \\ 1 & 2 \\ 7 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} 8 & 5 & 3 \\ 1 & 6 & 7 \end{bmatrix}$ (iii) $\begin{bmatrix} 9 & 1 \end{bmatrix}$

(iv) $\begin{bmatrix} 8 & 7 \\ 1 & 8 \end{bmatrix}$ (v) $\begin{bmatrix} 3 & 7 & 1 \\ 7 & 6 & 8 \\ 7 & 8 & 8 \\ 1 & 2 & 5 \end{bmatrix}$

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14. Which of the following pairs of matrices are comparable?

(i) $\begin{bmatrix} 9 & -8 \\ 7 & 5 \end{bmatrix}$, $\begin{bmatrix} -7 & 3 \end{bmatrix}$

(ii) $\begin{bmatrix} 9 & -8 \\ 7 & 5 \end{bmatrix}$, $\begin{bmatrix} 5 & -9 \\ -6 & -1 \\ 9 & 6 \end{bmatrix}$

(iii) $\begin{bmatrix} 9 & -8 \\ 7 & 5 \end{bmatrix}$, $\begin{bmatrix} -9 & -3 & 4 \\ 5 & 9 & -9 \end{bmatrix}$

(iv)

$\begin{bmatrix} -9 & -3 & 4 \\ 5 & 9 & -9 \end{bmatrix}, \begin{bmatrix} 5 & -9 \\ -6 & -1 \\ 9 & 6 \end{bmatrix}$

(v) $\begin{bmatrix} 9 & -8 \\ 7 & 5 \end{bmatrix}, \begin{bmatrix} -6 & -5 \\ -5 & 4 \end{bmatrix}$

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15. Find the additive identity of matrix A = $\begin{bmatrix} 9 & -2 \\ 9 & -5 \end{bmatrix}$

(i) $\begin{bmatrix} 0 & 0 \\ -2 & 0 \end{bmatrix}$ (ii) $\begin{bmatrix} 0 & 0 \\ 3 & 0 \end{bmatrix}$ (iii) $\begin{bmatrix} 0 & 0 \\ 0 & -1 \end{bmatrix}$

(iv) $\begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ (v) $\begin{bmatrix} 0 & 1 \\ 0 & 0 \end{bmatrix}$

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16. Find the additive identity of matrix A = $\begin{bmatrix} 3 & 3 & -4 \\ 4 & 1 & 3 \\ 0 & -2 & 4 \end{bmatrix}$

(i) $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & -2 \\ 0 & 0 & 0 \end{bmatrix}$ (ii) $\begin{bmatrix} 3 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ (iii) $\begin{bmatrix} 0 & 0 & -1 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

(iv) $\begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$ (v) $\begin{bmatrix} 0 & 0 & 0 \\ 1 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$

Assignment Key

1) (iii)
2) (ii)
3) (ii)
4) (i)
5) (iii)
6) (v)
7) (ii)
8) (iv)
9) (iii)
10) (iii)
11) (iv)
12) (ii)
13) (iv)
14) (v)
15) (iv)
16) (iv)