EduSahara™ Assignment

Name : Matrix Addition and Subtraction Concepts

Chapter : Matrices

Grade : ICSE Grade X

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1. Matrix $A = \begin{bmatrix} 4 & -1 & -4 \\ 1 & -1 & -4 \\ 2 & -3 & -2 \end{bmatrix}$ is the additive inverse of

(i) $\begin{bmatrix} -4 & 1 & 4 \\ -1 & 1 & 4 \\ -2 & 3 & 2 \end{bmatrix}$ (ii) $\begin{bmatrix} -4 & 1 & 4 \\ -2 & 1 & 4 \\ -2 & 3 & 2 \end{bmatrix}$ (iii) $\begin{bmatrix} -4 & 1 & 4 \\ -1 & 4 & 4 \\ -2 & 3 & 2 \end{bmatrix}$ (iv) $\begin{bmatrix} -4 & 1 & 4 \\ -1 & 1 & 4 \\ -5 & 3 & 2 \end{bmatrix}$ (v) $\begin{bmatrix} -4 & 1 & 4 \\ -1 & 2 & 4 \\ -2 & 3 & 2 \end{bmatrix}$

2. If the elements of matrix A are multiplied with -1 , we get

(i) additive identity of A (ii) multiplicative inverse of A (iii) multiplicative identity of A

(iv) additive inverse of A

3. If the elements of matrix A are multiplied with 0 , we get

(i) additive identity of A (ii) multiplicative inverse of A (iii) additive inverse of A

(iv) multiplicative identity of A

4. A 4×2 matrix has

a) 4 rows and 8 columns
b) 2 rows and 4 columns
c) 4 rows and 2 columns
d) 6 rows and 2 columns

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

5. Which of the following are true for matrices A and B ?

a) The orders of $(A \times B)$ and $(B \times A)$ are same
b) If A and B can be added, they must have the same order
c) If AB = 0, A = 0 or B = 0 or both A and B are zero matrices
d) If A and B can be multiplied, they must have the same order

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

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

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

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

7. Which of the following are true ?

a) If AB = 0, then A = 0 or B = 0 or both A & B are 0
b) If matrices A & B can be added, they must have the same order
c) The order of $(A \times B)$ and $(B \times A)$ is same
d) If matrices A & B can be multiplied, they must have the same order

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

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

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

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

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

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

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

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

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

(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 $\begin{bmatrix} 2 & 7 \\ 1 & 1 \end{bmatrix}$?

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

13. Which of the following matrices can be added to $\begin{bmatrix} 4 & 1 \\ 3 & 1 \end{bmatrix}$?

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

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

(i) $\begin{bmatrix} -5 & 1 \\ 9 & -9 \end{bmatrix}, \begin{bmatrix} -7 & 7 \\ 4 & 4 \\ -9 & 4 \end{bmatrix}$ (ii) $\begin{bmatrix} -5 & 1 \\ 9 & -9 \end{bmatrix}, \begin{bmatrix} -5 & 0 \end{bmatrix}$ (iii) $\begin{bmatrix} -5 & 1 \\ 9 & -9 \end{bmatrix}, \begin{bmatrix} 5 & 1 \\ -9 & -9 \end{bmatrix}$ (iv) $\begin{bmatrix} 0 & -9 & -8 \\ -3 & 3 & 4 \end{bmatrix}, \begin{bmatrix} -7 & 7 \\ 4 & 4 \\ -9 & 4 \end{bmatrix}$

(v) $\begin{bmatrix} -5 & 1 \\ 9 & -9 \end{bmatrix}, \begin{bmatrix} 0 & -9 & -8 \\ -3 & 3 & 4 \end{bmatrix}$

15. Find the additive identity of matrix $A = \begin{bmatrix} -6 & 7 \\ 1 & -1 \end{bmatrix}$

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

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

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

Assignment Key

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

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