

PARISHRAM 2025

Mathematics

DPP: 2

Matrices

Q1 If the order of matrix A is 3×5 and the order of the matrix B is $x \times 7$, then the value of x is equal to if product of AB is possible.

- (A) 5 (B) 3
(C) 7 (D) 2

Q2 Which of the following is not true?

- (A) $A + B = B + A$
(B) $(A + B) + C = A + (B + C)$
(C) $k(A + B) = kA + kB$
(D) $A - B \neq B - A$

Q3 If the matrix $A = \begin{bmatrix} 3 & -2 \\ -7 & -8 \end{bmatrix}$, then additive inverse of A is equal to

- (A) $\begin{bmatrix} -3 & 2 \\ 7 & 8 \end{bmatrix}$
(B) $\begin{bmatrix} -3 & -2 \\ 7 & 8 \end{bmatrix}$
(C) $\begin{bmatrix} 3 & -2 \\ -7 & +8 \end{bmatrix}$
(D) $\begin{bmatrix} 3 & 2 \\ 7 & 8 \end{bmatrix}$

Q4 If the matrix $A = \begin{bmatrix} -1 & 2 & 3 \\ -5 & 8 & -2 \\ 0 & 1 & -3 \end{bmatrix}$, then the

negative of $5A$ is equal to

- (A) $\begin{bmatrix} 5 & -10 & -15 \\ 25 & -40 & 10 \\ 0 & -5 & 15 \end{bmatrix}$
(B) $\begin{bmatrix} -5 & 10 & 15 \\ -25 & 40 & -10 \\ 0 & 5 & -15 \end{bmatrix}$
(C)

(D) $\begin{bmatrix} -5 & 10 & 15 \\ -25 & -40 & 10 \\ 0 & -5 & 15 \\ 5 & -10 & -15 \\ 25 & 40 & 10 \\ 0 & 5 & 15 \end{bmatrix}$

Q5

If the matrix $A = \begin{bmatrix} 5 & 1 & 2 \\ -7 & 0 & 6 \\ -1 & 1 & -2 \end{bmatrix}$ and

$B = \begin{bmatrix} -1 & 0 & 3 \\ -2 & 1 & 1 \\ 1 & -1 & 0 \end{bmatrix}$, then the value of

$2A - 4B$ is equal to

- (A) $\begin{bmatrix} 14 & 2 & -8 \\ -6 & -4 & 8 \\ -6 & 6 & -4 \end{bmatrix}$
(B) $\begin{bmatrix} 14 & -2 & 8 \\ 6 & 4 & -8 \\ 6 & -6 & 4 \end{bmatrix}$
(C) $\begin{bmatrix} -14 & -2 & 8 \\ -6 & 4 & -8 \\ -6 & 6 & -4 \end{bmatrix}$
(D) $\begin{bmatrix} 14 & 2 & 8 \\ 6 & 4 & 8 \\ 6 & 6 & 4 \end{bmatrix}$

Q6

If $2A - B = \begin{pmatrix} 6 & -6 & 0 \\ -4 & 2 & 1 \end{pmatrix}$ and

$2B + A = \begin{pmatrix} 3 & 2 & 5 \\ -2 & 1 & -7 \end{pmatrix}$, then $A =$

- (A) $\begin{pmatrix} 3 & 2 & -1 \\ 2 & -1 & 1 \end{pmatrix}$
(B)



$$(C) \begin{pmatrix} 3 & -2 & 1 \\ -2 & 1 & -1 \\ -3 & 2 & 1 \\ 2 & 1 & -1 \end{pmatrix}$$

(D) None of these.

Q7 If $3X + Y = \begin{pmatrix} 5 & 0 \\ -2 & 3 \end{pmatrix}$ and $2Y = \begin{pmatrix} 4 & 3 \\ 1 & 6 \end{pmatrix}$,

then $X =$

$$(A) \begin{pmatrix} 1 & -\frac{1}{2} \\ -\frac{5}{6} & 0 \end{pmatrix}$$

$$(B) \begin{pmatrix} \frac{1}{2} & -1 \\ -5 & 0 \end{pmatrix}$$

$$(C) \begin{pmatrix} 1 & \frac{1}{2} \\ -\frac{5}{3} & 0 \end{pmatrix}$$

(D) None of these

Q8 If the matrix $A = \begin{bmatrix} -3 & 1 \\ 0 & 2 \end{bmatrix}$ and $B = \begin{bmatrix} 1 \\ 5 \end{bmatrix}$,

then the value of AB is equal to

$$(A) \begin{bmatrix} 2 \\ 10 \end{bmatrix}$$

$$(B) \begin{bmatrix} -2 \\ 10 \end{bmatrix}$$

$$(C) \begin{bmatrix} 2 \\ -10 \end{bmatrix}$$

$$(D) \begin{bmatrix} -2 \\ -10 \end{bmatrix}$$

Q9 Which of the following is incorrect?

$$(A) A(BC) = (AB)C$$

$$(B) A(B + C) = AB + AC$$

$$(C) AB = BA$$

$$(D) (B + C)D = BD + CD$$

Q10 If $A = \begin{bmatrix} -1 & 0 & 3 \\ 2 & -1 & 1 \\ 0 & 1 & -2 \end{bmatrix}$, then the value of A^2

is equal to

(A)

$$(B) \begin{bmatrix} 1 & 3 & 9 \\ 4 & 2 & 3 \\ 2 & 3 & 5 \end{bmatrix}$$

$$(C) \begin{bmatrix} 1 & 3 & -9 \\ -4 & 2 & 3 \\ 2 & -3 & 5 \end{bmatrix}$$

$$(D) \begin{bmatrix} -1 & -3 & 9 \\ -4 & 2 & 3 \\ 2 & -3 & 5 \end{bmatrix}$$

$$(D) \begin{bmatrix} -1 & -3 & -9 \\ -4 & -2 & -3 \\ -2 & -3 & -5 \end{bmatrix}$$

Q11

The value of $\begin{bmatrix} 1 & -2 & 3 \\ 0 & 1 & 5 \end{bmatrix} \begin{bmatrix} 1 \\ 5 \\ -6 \end{bmatrix}$ is equal to

$$(A) \begin{bmatrix} -27 \\ -25 \end{bmatrix}$$

$$(B) \begin{bmatrix} 27 \\ 25 \end{bmatrix}$$

$$(C) \begin{bmatrix} -27 \\ 25 \end{bmatrix}$$

$$(D) \begin{bmatrix} 27 \\ -25 \end{bmatrix}$$

Q12

If $\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} 3 & 1 \\ 2 & 5 \end{bmatrix} = \begin{bmatrix} 7 & 11 \\ k & 23 \end{bmatrix}$, then the value of k is

(A) 15

(B) 17

(C) 21

(D) None of these

Q13

If matrix $A = \begin{bmatrix} 1 & -1 \\ -1 & 1 \end{bmatrix}$ and $A^2 = kA$, then the value of k is

(A) 6

(B) -7

(C) 8

(D) 2

Q14

If $\begin{bmatrix} 2x & 3 \end{bmatrix} \begin{bmatrix} 1 & 2 \\ -3 & 0 \end{bmatrix} \begin{bmatrix} x \\ 8 \end{bmatrix} = O$, then the value of x is

(A) $\frac{23}{2}$

(B) $\frac{13}{2}$



(C) $\frac{-13}{2}$
 (D) $\frac{-23}{2}$

Q15 If $A = \begin{pmatrix} 2 & 0 \\ -3 & 1 \end{pmatrix}$ and $B = \begin{pmatrix} -2 & 4 \\ 3 & 1 \end{pmatrix}$ and X is a matrix such that $3A + 4X = 5B$, then $X =$

- (A) $\begin{pmatrix} -3 & 5 \\ 6 & 2 \end{pmatrix}$
 (B) $\begin{pmatrix} -4 & 5 \\ 6 & \frac{1}{2} \end{pmatrix}$
 (C) $\begin{pmatrix} -4 & 5 \\ 3 & 1 \end{pmatrix}$
 (D) $\begin{pmatrix} 4 & -5 \\ 6 & -1 \end{pmatrix}$

Q16 Find the value of x , if

$$\begin{bmatrix} 1 & 2 & 1 \end{bmatrix} \begin{bmatrix} 1 & 2 & 0 \\ 2 & 0 & 1 \\ 1 & 0 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 2 \\ x \end{bmatrix} = O ?$$

Q17 If $P(x) = \begin{bmatrix} \cos x & \sin x \\ -\sin x & \cos x \end{bmatrix}$, then show that

$$P(x) \cdot P(y) = P(x + y) = P(y) \cdot P(x).$$

Q18 In a departmental store, a customer X purchase 2 packets of tea, 4 kg of rice and 5 dozen oranges. Customer Y purchases 1 packet of tea, 5 kg of rice and 24 oranges. Price of one pack of tea is Rs. 54, 1 kg of rice is Rs. 22 and that of 1 dozen oranges is Rs. 24. Use matrix multiplication method and calculate each individual bill.

Q19 Find the matrix A , if

$$\begin{bmatrix} 2 & -1 \\ 1 & 0 \\ -3 & 4 \end{bmatrix} A = \begin{bmatrix} -1 & -8 & -10 \\ 1 & -2 & -5 \\ 9 & 22 & 15 \end{bmatrix}$$

Q20

If

$$A = \begin{bmatrix} 0 & 6 & 7 \\ -6 & 0 & 8 \\ 7 & -8 & 0 \end{bmatrix}, B = \begin{bmatrix} 0 & 1 & 1 \\ 1 & 0 & 2 \\ 1 & 2 & 0 \end{bmatrix}, C = \begin{bmatrix} 2 \\ -2 \\ 3 \end{bmatrix}$$

then calculate AC , BC and $(A + B)C$.

Also verify that $(A + B)C = AC + BC$.



Answer Key

Q1 (A)
Q2 (D)
Q3 (A)
Q4 (A)
Q5 (A)
Q6 (B)
Q7 (A)
Q8 (A)
Q9 (C)
Q10 (B)
Q11 (A)

Q12 (B)
Q13 (D)
Q14 (D)
Q15 (B)
Q16 -1
Q17 Check the solution
Q18 Bill of customer X = Rs. 316
Bill of customer Y = Rs. 212
Q19 $\begin{bmatrix} 1 & -2 & -5 \\ 3 & 4 & 0 \end{bmatrix}$
Q20 $\begin{bmatrix} 9 \\ 12 \\ 30 \end{bmatrix}, \begin{bmatrix} 1 \\ 8 \\ -2 \end{bmatrix}, \begin{bmatrix} 10 \\ 20 \\ 28 \end{bmatrix}$



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