

Class XII Chapter 4 - DETERMINANTS

Worksheet

MODULE 3/4

MCQ/ one mark Questions

- 1 A and B are invertible matrices of the same order such that $(AB)^{-1} = 8$. If $|A| = 2$, then $|B|$ is equal to
a) 16 b) 4 c) 6 d) $\frac{1}{16}$
- 2 The cofactor of the element a_{23} in $\begin{vmatrix} 1 & 2 & -3 \\ -4 & 5 & 3 \\ 0 & 8 & -9 \end{vmatrix}$ is
a) 8 b) -4 c) 13 d) -8
- 3 Let $A = \begin{bmatrix} x & -3 & 1 \\ 2 & y & 1 \\ 1 & 1 & z \end{bmatrix}$. If $xyz = 7$, $x + y - 6z = 11$ and I is the identity matrix of order 2. Then, $A \cdot \text{adj}A$ is equal to
a) 7I b) -5I c) 13I d) -8I
- 4 If $\Delta = \begin{vmatrix} a_{11} & a_{12} & a_{13} \\ a_{21} & a_{22} & a_{23} \\ a_{31} & a_{32} & a_{33} \end{vmatrix}$ and A_{ij} is Cofactor of a_{ij} , then value of Δ is given by
a) $a_{11}A_{11} + a_{12}A_{21} + a_{13}A_{31}$ **b) $a_{11}A_{21} + a_{12}A_{22} + a_{13}A_{23}$**
c) $a_{31}A_{11} + a_{32}A_{12} + a_{33}A_{13}$ **d) $a_{12}A_{12} + a_{22}A_{22} + a_{32}A_{32}$**
- 5 If A is a square matrix of order 2 and $|\text{adj}.A| = 9$, then $|A|$ is equal to
a) 3 b) 9 c) 27 d) 81
- 6 For any 2×2 matrix if $A(\text{adj}A) = \begin{bmatrix} 10 & 0 \\ 0 & 10 \end{bmatrix}$ then $|A|$ is equal to
a) 20 b) 100 c) 10 d) 0
- 7 The Value of k for which the matrix $\begin{bmatrix} k & 2 \\ 3 & 4 \end{bmatrix}$ has no inverse is
a) $k = \frac{3}{2}$ b) $k = \frac{2}{3}$ c) $k \neq \frac{3}{2}$ d) $k \neq \frac{2}{3}$
- 8 If A is square matrix satisfying $A^2 = I$, then what is the inverse of A ?
- 9 If A is non singular matrix of order 3 and $|A| = 3$, then find $|2A|$

10 If A is a square matrix of order 3 such that $|adjA|=64$. Find $|A^T|$.

11 For what value of k, the matrix $A = \begin{bmatrix} 2-k & 3 \\ -5 & 1 \end{bmatrix}$ is not invertible?

Two Marks Questions

12 Write A^{-1} for $A = \begin{bmatrix} 2 & 5 \\ 1 & 3 \end{bmatrix}$

13 If $A = \begin{bmatrix} 4 & 2 \\ 7 & -4 \end{bmatrix}$, write A^{-1} in terms of A

14 Find the adjoint of $\begin{bmatrix} 1 & -3 \\ 6 & -2 \end{bmatrix}$

15 $A = \begin{bmatrix} 2 & 3 \\ 5 & -2 \end{bmatrix}$ be such that $A^{-1} = kA$, then find the value of k.

Four/Six marks Questions

16 If $A = \begin{bmatrix} 3 & -5 \\ -4 & 2 \end{bmatrix}$, show that $A^2 - 5A - 14I = 0$. Hence find A^{-1}

17 Find the adjoint of the matrix $\begin{bmatrix} 4 & 1 & 3 \\ -3 & 6 & 4 \\ -2 & -2 & 5 \end{bmatrix}$

18 Verify $A \cdot (adj A) = (adj A) \cdot A = |A| I$ for the following matrices

1) $\begin{bmatrix} -3 & -2 & 1 \\ -5 & 3 & 4 \\ -4 & -2 & 0 \end{bmatrix}$ 2) $\begin{bmatrix} 3 & 0 & -3 \\ -5 & 6 & 4 \\ -1 & -2 & 5 \end{bmatrix}$

19 Find the inverse of each of the matrices (if it exists)

1) $\begin{bmatrix} 2 & -1 & 3 \\ 3 & 1 & -4 \\ -4 & -2 & 2 \end{bmatrix}$ 2) $\begin{bmatrix} 2 & -2 & 1 \\ -5 & 0 & -4 \\ -1 & -2 & 3 \end{bmatrix}$

20 Let $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 7 & 9 \end{bmatrix}$. Verify that $(AB)^{-1} = B^{-1} A^{-1}$.
