INDIAN SCHOOL AL WADI AL KABIR
Dept. of Mathematics 2022 – 2023
Class XII – Applied Mathematics
Work Sheet – Determinants 2

1 If $\begin{vmatrix} x & 2 \\ 18 & x \end{vmatrix} = \begin{vmatrix} 6 & 2 \\ 18 & 6 \end{vmatrix}$, then x is equal to

(A) 6 (B) ± 6 (C) -6 (D) 0

2 Let A be a square matrix of order 3×3, then $|kA|$ is equal to

(A) $k|A|$ (B) $k^2|A|$ (C) $k^3|A|$ (D) $3k|A|$

3 Which of the following is correct

(A) Determinant is a square matrix.

(B) Determinant is a number associated to a matrix.

(C) Determinant is a number associated to a square matrix.

(D) None of these

4 If area of triangle is 35 sq units with vertices $(2, -6)$, $(5, 4)$ and $(k, 4)$. Then k is

(A) 12 (B) -2 (C) $-12, -2$ (D) $12, -2$

5 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 Cofactors of a_{ij}, then value of Δ is given by

(A) $a_{11}A_{31} + a_{12}A_{32} + a_{13}A_{33}$ (B) $a_{11}A_{11} + a_{12}A_{21} + a_{13}A_{31}$

(C) $a_{21}A_{11} + a_{22}A_{12} + a_{23}A_{13}$ (D) $a_{11}A_{11} + a_{21}A_{21} + a_{31}A_{31}$

6 Let A be a nonsingular square matrix of order 3×3. Then $|adj\ A|$ is equal to

(A) $|A|$ (B) $|A|^2$ (C) $|A|^3$ (D) $3|A|$

7 If A is an invertible matrix of order 2, then det (A^{-1}) is equal to

(A) det (A) (B) $\frac{1}{\det(A)}$ (C) 1 (D) 0

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

8 $\begin{bmatrix} 2 & -2 \\ 4 & 3 \end{bmatrix}$

9 $\begin{bmatrix} -1 & 5 \\ -3 & 2 \end{bmatrix}$

10 $\begin{bmatrix} 1 & 2 & 3 \\ 0 & 2 & 4 \\ 0 & 0 & 5 \end{bmatrix}$

11	$\begin{bmatrix} 1 & 0 & 0 \\ 3 & 3 & 0 \\ 5 & 2 & -1 \end{bmatrix}$	12	$\begin{bmatrix} 2 & 1 & 3 \\ 4 & -1 & 0 \\ -7 & 2 & 1 \end{bmatrix}$	13	$\begin{bmatrix} 1 & -1 & 2 \\ 0 & 2 & -3 \\ 3 & -2 & 4 \end{bmatrix}$
9	Let $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 7 & 9 \end{bmatrix}$. Verify that $(AB)^{-1} = B^{-1} A^{-1}$				
10	If $A = \begin{bmatrix} 3 & 1 \\ -1 & 2 \end{bmatrix}$, show that $A^2 - 5A + 7I = O$. Hence find A^{-1}.				
11	For the matrix $A = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & -3 \\ 2 & -1 & 3 \end{bmatrix}$ Show that $A^3 - 6A^2 + 5A + 11\,I = O$. Hence, find A^{-1}				
12	If $A = \begin{bmatrix} 2 & -1 & 1 \\ -1 & 2 & -1 \\ 1 & -1 & 2 \end{bmatrix}$ Verify that $A^3 - 6A^2 + 9A - 4I = O$ and hence find A^{-1}				
13	Solve the following system of equations by matrix method $3x - 2y + 3z = 8$ $2x + y - z = 1$ $4x - 3y + 2z = 4$				
	Solve system of linear equations, using matrix method.				
14	$5x + 2y = 4$ $7x + 3y = 5$	15	$2x - y = -2$ $3x + 4y = 3$		
16	$2x + y + z = 1$ $x - 2y - z = \frac{3}{2}$ $3y - 5z = 9$	17	$x - y + z = 4$ $2x + y - 3z = 0$ $x + y + z = 2$		
18	$2x + 3y + 3z = 5$ $x - 2y + z = -4$ $3x - y - 2z = 3$	19	$x - y + 2z = 7$ $3x + 4y - 5z = -5$ $2x - y + 3z = 12$		