INDIAN SCHOOL AL WADI AL KABIR
Dept. of Mathematics 2024 – 2025
Class XII – Mathematics
Work Sheet – Determinants 1

1	If A and B are square matrices of order 3 such that $\|A\| = -1$, $\|B\| = 3$, then det $(3AB)$ is equal to (a) -9 (b) -27 (c) -81 (d) 81
2	If a, b, c are distinct, then the value of x satisfying $\begin{vmatrix} 0 & x^2-a & x^3-b \\ x^2+a & 0 & x^2+c \\ x^4+b & x-c & 0 \end{vmatrix} = 0$ (a) c (b) a (c) b (d) 0
3	The equations $x+y=2, 2x+2y=3$ have (a) no solution (b) a unique solution (c) finitely many more than one solutions (d) infinitely many solutions
4	Which of the following is not correct in a given determinant of A, where $A=[a_{ij}]_{3\times3}$ (a) Order of minor is less than order of the det (A) (b) Minor of an element can never be equal to cofactor of the same element (c) Value of a determinant is obtaind by multiplying elements of a row or column by corresponding cofactors. (d) Order of minors and cofactors of elements of A is same
5	If A and B are square matrix of order n, then det (λA) is equal to (λ being a scalar) (a) $\lambda \det A$ (b) $\|\lambda\|^n \det A$ (c) $\lambda^n \det A$ (d) None of these
6	If A and B are square matrices of order 2, then det $(A+B) = 0$ is possible only when (a) det $(A) = 0$ or det $(B) = 0$ (b) det (A) + det $(B) = 0$ (c) det $(A) = 0$ and det $(B) = 0$ (d) $A + B = 0$
7	If A is square matrix such that $A^2 = I$, then A^{-1} is equal to (a) I (b) O (c) A (d) $I + A$
8	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 C_{ij} is cofactor of a_{ij} in A, then the value of $\|A\|$ is given by (a) $a_{11}c_{31} + a_{12}c_{32} + a_{13}c_{33}$ (b) $a_{11}c_{11} + a_{12}c_{21} + a_{13}c_{31}$ (c) $a_{21}c_{11} + a_{22}c_{12} + a_{23}c_{13}$ (d) $a_{11}c_{11} + a_{21}c_{21} + a_{31}c_{31}$

9	If A is square matrix of order 2, then det $(adj\ A)$ = (*a*) I (*b*) det A (*c*) $(\det A)^2$ (*d*) None of these
10	If A is non-singular matrix of order 3, then $adj\ (adj\ A)$ = (*a*) I (*b*) $\lvert A\rvert I$ (*c*) A (*d*) $(\det A)A$
11	If A is any of square matrix of order n, then A (adj A) is equal to (*a*) I (*b*) $\lvert A\rvert I_n$ (*c*) 0 (*d*) $\lvert A\rvert^n$
12	A square matrix A is invertible iff det A is equal to (*a*) 0 (*b*) 1 (*c*) non-zero (*d*) −1
13	If A, B, C, are three square matrices of the same order such that $A = B + C$, then det A is equal to (*a*) det B + det C (*b*) det B (*c*) det C (*d*) None of these
14	The value of det $\begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$ is equal to (*a*) cos2θ (*b*) 1 (*c*) 0 (*d*) None of these
15	Which of the following is not correct? (*a*) $\lvert A\rvert = \lvert A^T\rvert$, where $A = [a_{ij}]_{3\times 3}$ (*b*) $\lvert KA\rvert = K^3\lvert A\rvert$, where $A = [a_{ij}]_{3\times 3}$ (*c*) If A is a skew-symmetric matrix of odd order, then $\lvert A\rvert = 0$ (*d*) $\begin{vmatrix} a+b & c+d \\ e+f & g+h \end{vmatrix} = \begin{vmatrix} a & c \\ e & g \end{vmatrix} + \begin{vmatrix} b & d \\ f & h \end{vmatrix}$
16	Determinant of the matrix $A = [1\ -3\ -5]$ is (*a*) 1 + 3 + (–5) (*b*) 1 × 3 × (–5) (*c*) not defined (*d*) None of these
17	Evaluate the determinant $\Delta = \begin{vmatrix} 1 & 2 & 4 \\ -1 & 3 & 0 \\ 4 & 1 & 0 \end{vmatrix}$
18	Find values of x for which $\begin{vmatrix} 3 & x \\ x & 1 \end{vmatrix} = \begin{vmatrix} 3 & 2 \\ 4 & 1 \end{vmatrix}$

Answers

1	C
5	C
9	B
13	D

2	D
6	D
10	D
14	B

3	A
7	C
11	B
15	D

4	B
8	D
12	C
16	C