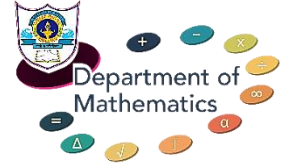




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Class XII – Mathematics  
Work Sheet – Determinants 1



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 $A = [a_{ij}]_{3 \times 3}$ (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 obtained 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 $\det(\lambda A)$ is equal to ( $\lambda$ 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 $\det(\text{adj } A) =$ (a) $I$ (b) $\det A$ (c) $(\det A)^2$ (d) None of these
10	If $A$ is non-singular matrix of order 3, then $\text{adj}(\text{adj } A) =$ (a) $I$ (b) $ A I$ (c) $A$ (d) $(\det A)A$
11	If $A$ is any of square matrix of order $n$ , then $A(\text{adj } A)$ is equal to (a) $I$ (b) $ A I_n$ (c) $0$ (d) $ A ^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) $\cos 2\theta$ (b) $1$ (c) $0$ (d) None of these
15	Which of the following is not correct? (a) $ A  =  A^T $ , where $A = [a_{ij}]_{3 \times 3}$ (b) $ KA  = K^3 A $ , where $A = [a_{ij}]_{3 \times 3}$ (c) If $A$ is a skew-symmetric matrix of odd order, then $ A  = 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) $1 \times 3 \times (-5)$ (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	2	D	3	A	4	B
5	C	6	D	7	C	8	D
9	B	10	D	11	B	12	C
13	D	14	B	15	D	16	C