PARISHRAM 2025

Mathematics

DPP: 1

Determinants

Q1 The value of the determinant of the matrix $A = \begin{bmatrix} 2 & -1 \\ 3 & -5 \end{bmatrix}$ is equal to

(A) 7 (B) -7
(C) -8 (D) 8

Q2 The value of the determinants of the matrix $A = [-5]$ is equal to

(A) -5 (B) 5
(C) 10 (D) -10

Q3 If $\begin{vmatrix} k & -2 \\ 5 & 7 \end{vmatrix} = \begin{vmatrix} 1 & -1 \\ 2 & 3 \end{vmatrix}$, then k is

(A) $\frac{-5}{7}$
(B) $\frac{5}{7}$
(C) $\frac{-3}{2}$
(D) $\frac{3}{2}$

Q4 If $A = \begin{vmatrix} 2 & -5 \\ 3 & 7 \end{vmatrix}$, then the value of $|2A|$ is equal to

(A) 116 (B) 117
(C) 115 (D) 118

Q5 If $|A| = 20$, then the value of $|3A|$ is equal to (order of matrix is 3)

(A) 540 (B) 580
(C) 640 (D) 680

Q6 The value of $\begin{vmatrix} \sin\theta & -\cos\theta \\ \cos\theta & \sin\theta \end{vmatrix}$ is equal to

(A) 1 (B) -1
(C) 0 (D) 2

Q7 The value of the determinant $\begin{vmatrix} 6 & 7 & 8 \\ 18 & 21 & 24 \\ 5 & -6 & 2 \end{vmatrix}$ is

(A) 0 (B) 4
(C) -4 (D) 1

Q8 The value of the determinant $\begin{vmatrix} 14 & 8 & 11 \\ 6 & 5 & 6 \\ 8 & 3 & 5 \end{vmatrix}$ is

(A) 0 (B) 5
(C) 15 (D) 75

Q9 Let $ax^3 + bx^2 + cx + d = \begin{vmatrix} 3x & x+1 & x-1 \\ x-3 & -2x & x+2 \\ x+3 & x-4 & 5x \end{vmatrix}$ then the value of d is

(A) 5 (B) 0
(C) -6 (D) 4

Q10 Let $A = \begin{bmatrix} \cos\theta & \sin\theta \\ -\sin\theta & \cos\theta \end{bmatrix}$, then $|2A|$ is equal to

(A) $4\cos(2\theta)$ (B) 1
(C) 2 (D) 4

Q11 Find the area of the $\triangle ABC$ formed by vertices $A(5,4), B(6,2)$ and $C(8,3)$.

Q12 Find the value of k for which $(k,5), (-3,8)$ and $(7,2)$ are collinear.

Q13 If area of the triangle is 25 square units with vertices $(3,-4), (1,0)$ and $(2,k)$, then find the value of k.

Q14 If $\begin{vmatrix} x^4 & 3x & x+4 \\ x+4 & x^2 & 3x \\ 3x & x+4 & x \end{vmatrix} = ax^5 + bx^4 + cx^3 + dx^2 + ex + f$ then find the value of f.

Q15 Find the equation of straight line joining $(7,2)$ and$(5,3)$.

Answer Key

Q1 (B)

Q2 (A)

Q3 (A)

Q4 (A)

Q5 (A)

Q6 (A)

Q7 (A)

Q8 (A)

Q9 (C)

Q10 (D)

Q11 Area of $\Delta ABC = \frac{5}{2}\ sq.\ units$

Q12 $k = 2$

Q13 $k = -27,\ 23$

Q14 $f = 64$

Q15 $x + 2y = 11$