

NCERT Solutions for Class 12 Maths Chapter 4 Determinants

Question 1:

Evaluate the determinant $\begin{vmatrix} 2 & 4 \\ -5 & -1 \end{vmatrix}$

Solution:

Let $|A| = \begin{vmatrix} 2 & 4 \\ -5 & -1 \end{vmatrix}$

Hence,

$$\begin{aligned} |A| &= \begin{vmatrix} 2 & 4 \\ -5 & -1 \end{vmatrix} \\ &= 2(-1) - 4(-5) \\ &= -2 + 20 \\ &= 18 \end{aligned}$$

Question 2:

Evaluate the determinants:

(i) $\begin{vmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{vmatrix}$

(ii) $\begin{vmatrix} x^2 - x + 1 & x - 1 \\ x + 1 & x + 1 \end{vmatrix}$

Solution:

(i) $\begin{vmatrix} \cos \theta & -\sin \theta \\ \sin \theta & \cos \theta \end{vmatrix} = (\cos \theta)(\cos \theta) - (-\sin \theta)(\sin \theta)$
 $= \cos^2 \theta + \sin^2 \theta$
 $= 1$

(ii) $\begin{vmatrix} x^2 - x + 1 & x - 1 \\ x + 1 & x + 1 \end{vmatrix} = (x^2 - x + 1)(x + 1) - (x - 1)(x + 1)$
 $= x^3 - x^2 + x + x^2 - x + 1 - (x^2 - 1)$
 $= x^3 + 1 - x^2 + 1$
 $= x^3 - x^2 + 2$

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