



If $P = \begin{bmatrix} 1 & \alpha & 3 \\ 1 & 3 & 3 \\ 2 & 4 & 4 \end{bmatrix}$ is adjoint of a 3×3 matrix A and $|A| = 4$, then α is equal to :

$$P = \begin{bmatrix} 1 & \alpha & 3 \\ 1 & 3 & 3 \\ 2 & 4 & 4 \end{bmatrix}$$

$$|P| = \begin{vmatrix} 1 & \alpha & 3 \\ 1 & 3 & 3 \\ 2 & 4 & 4 \end{vmatrix} \quad R_2 \rightarrow R_2 - R_1$$

$$\begin{vmatrix} 1 & \alpha & 3 \\ 0 & 3 - \alpha & 0 \\ 2 & 4 & 4 \end{vmatrix} = (3 - \alpha)(4 - 6) = 2\alpha - 6$$

$\therefore P$ is the adjoint of the matrix A

$$\Rightarrow |P| = |A|^2 = 16$$

$$|adj(A)| = |A|^{n-1}$$

$$\Rightarrow 2\alpha - 6 = 16 \Rightarrow \alpha = 11$$

A

4

B

11

C

5

D

0