Related Questions with Solutions

Questions

Quetion: 01

If $A = \begin{bmatrix} \cos\alpha & -\sin\alpha & 0 \\ \sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$, then $(\text{adj } A)^{-1} =$

A. $\begin{bmatrix} \cos\alpha & -\sin\alpha & 0 \\ \sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$

B. $\begin{bmatrix} -\cos\alpha & -\sin\alpha & 0 \\ \sin\alpha & -\cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$

C. $\begin{bmatrix} -\cos\alpha & \sin\alpha & 0 \\ \sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$

D. $\begin{bmatrix} \cos\alpha & \sin\alpha & 0 \\ -\sin\alpha & \cos\alpha & 0 \\ 0 & 0 & 1 \end{bmatrix}$

Solutions

Solution: 01

$|A| = \cos^2\alpha + \sin^2\alpha = 1 \neq 0$

So, A^{-1} exists.

We know, adj $A = |A|A^{-1}$

$\Rightarrow \text{adj } A = A^{-1} \qquad [\because |A| = 1]$

$\Rightarrow \quad (\text{adj } A)^{-1} = A$

Correct Options

Answer:01

Correct Options: A