



If the matrices $A = \begin{bmatrix} 1 & 1 & 2 \\ 1 & 3 & 4 \\ 1 & -1 & 3 \end{bmatrix}$, $B = \text{adj}(A)$ and $C = 3A$, then $\frac{|\text{adj}(B)|}{|C|}$ is equal to :

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$$|A| = \begin{vmatrix} 1 & 1 & 2 \\ 1 & 3 & 4 \\ 1 & -1 & 3 \end{vmatrix}$$

$$R_3 \rightarrow R_3 - R_1$$

$$R_2 \rightarrow R_2 - R_1$$

$$|A| = \begin{vmatrix} 1 & 1 & 2 \\ 0 & 2 & 2 \\ 0 & -2 & 1 \end{vmatrix} = 6$$

$$\frac{|\text{adj}(B)|}{|C|} = \frac{|\text{adj}(\text{adj}(A))|}{|3A|} = \frac{|A|^{(3-1)^2}}{3^3|A|} = \frac{6^3}{3^3}$$

$$\Rightarrow \frac{|\text{adj}(B)|}{|C|} = 8$$

A

8

B

2

C

16

D

72