

Exemplar Problem

Matrix and Determinants

54. $|\text{adj. } A| = |A|^2$, where A is a square matrix of order two.

Ans: Here, A is square matrix of order two

We know that,

$$\Rightarrow A \cdot \text{Adj } A = |A| I$$

$$\Rightarrow |A \cdot \text{Adj } A| = ||A| I|$$

$$\Rightarrow |A| |\text{Adj } A| = |A|^n$$

$$\Rightarrow |\text{Adj } A| = \frac{|A|^n}{|A|}$$

$$\Rightarrow |\text{Adj } A| = |A|^{n-1}$$

Here, $n = 2$

$$\Rightarrow |\text{Adj } A| = |A|^{2-1}$$

$$\Rightarrow |\text{Adj } A| = |A|$$

Hence, the given statement is false.