

(Q.4) Find the inverse of the matrix if it exists:

$$\begin{bmatrix} -1 & 5 \\ -3 & 2 \end{bmatrix}$$

Solution: Let $A = \begin{bmatrix} -1 & 5 \\ -3 & 2 \end{bmatrix}$

We have, $|A| = -2 + 15 = 13$

Now,

$$A_{11} = 2, \quad A_{12} = 3, \quad A_{21} = -5, \quad A_{22} = -1$$

$$\therefore \text{adj}A = \begin{bmatrix} 2 & -5 \\ 3 & -1 \end{bmatrix}$$

$$\therefore A^{-1} = \frac{1}{|A|} \text{adj}A = \frac{1}{13} \begin{bmatrix} 2 & -5 \\ 3 & -1 \end{bmatrix}$$