

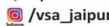
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Class - 12th

Chapter-5

Subject Maths

Worksheet-18

Inverse of a Matrix and Linear Equations

- 1. If matrix $A = \begin{bmatrix} 1 & 3 \\ 2 & 4 \end{bmatrix}$ then
 - Find the adjoint of A (adjA) (i)
 - Prove that $A.(adjA) = |A|I_2 = (adjA).A$ (ii)
 - Find A^{-1} (iii)
 - Prove that $(A^{-1})^T = (A^T)^{-1}$ (iv)
- 2. If matrix $A = \begin{bmatrix} \cos \theta & \sin \theta \\ -\sin \theta & \cos \theta \end{bmatrix}$ then find A^{-1}
- 3. If matrix $A = \begin{bmatrix} 1 & 2 & 3 \\ 2 & 3 & 1 \\ 3 & 1 & 2 \end{bmatrix}$ then find A^{-1} and prove that $A^{-1}A = I_3$.
- 4. If matrix $A = \begin{bmatrix} 3 & 7 \\ 2 & 5 \end{bmatrix}$ and $B = \begin{bmatrix} 6 & 8 \\ 7 & 9 \end{bmatrix}$ then prove that $(AB)^{-1} = B^{-1}A^{-1}$.
- 5. If matrix $A = \begin{bmatrix} 2 & 3 \\ 1 & 2 \end{bmatrix}$ then prove that $A^2 4A + I = 0$, where $O = \begin{bmatrix} 0 & 0 \\ 0 & 0 \end{bmatrix}$ and $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ and find A⁻¹.
- For what value of x is the matrix $\begin{vmatrix} 1 & -2 & 3 \\ 1 & 2 & 1 \\ x & 2 & -3 \end{vmatrix}$ singular?