

1] Find $A+B$ and $A-B$

a7 $A = \begin{bmatrix} -4 & 5 \\ 2 & 7 \end{bmatrix}$ $B = \begin{bmatrix} -3 & -3 \\ 0 & 11 \end{bmatrix}$

b7 $A = \begin{bmatrix} 1 & 2 & -1 \\ 0 & 1 & 2 \\ 4 & 2 & -3 \end{bmatrix}$ $B = \begin{bmatrix} -5 & 3 & 9 \\ 2 & 10 & -9 \\ 8 & 6 & 1 \end{bmatrix}$

2] Find the product $A \cdot B$ and $B \cdot A$

a7 $A = \begin{bmatrix} 1 & -2 \end{bmatrix}$ $B = \begin{bmatrix} 3 \\ -4 \end{bmatrix}$

b7 $A = \begin{bmatrix} 1 & 2 & 2 \\ 2 & 3 & 1 \end{bmatrix}$ $B = \begin{bmatrix} 1 & 3 \\ 1 & 4 \\ 2 & 2 \end{bmatrix}$

3] Find the inverse matrix A^{-1} to the matrix A .

a7 $A = \begin{bmatrix} 1 & 2 \\ 3 & 5 \end{bmatrix} \rightarrow A^{-1} = \begin{bmatrix} -5 & 2 \\ 3 & -1 \end{bmatrix}$

b7 $A = \begin{bmatrix} 1 & 3 & 1 \\ 3 & 2 & 5 \\ 2 & 2 & 2 \end{bmatrix} \rightarrow A^{-1} = \begin{bmatrix} 0 & -2 & 1 \\ -4 & 5 & -2 \\ 5 & -3 & 1 \end{bmatrix}$

4] Find The determinant of matrix M.

a) $M = \begin{bmatrix} 3 & 4 \\ 2 & -5 \end{bmatrix}$

b) $M = \begin{bmatrix} 1 & 2 & 4 \\ 2 & 7 & 3 \\ 3 & 1 & -5 \end{bmatrix}$

5] Solve the equation given by the determinant

a) $\begin{vmatrix} x^2 + 1 & x \\ x(x-3) & x-2 \end{vmatrix} = 0$

b) $\begin{vmatrix} x & 1 & x+1 \\ 2 & x & 3 \\ x+1 & 4 & x \end{vmatrix} = -2x^2 + 11$

6] Solve the matrix equations:-

a) $2X + 4A = 3BA$

$A = \begin{bmatrix} 0 & -1 \\ 2 & 1 \end{bmatrix}, B = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$

b) $X = AA^T - 2AB$

$A = \begin{bmatrix} 1 & 0 & -2 \\ 2 & -1 & 3 \end{bmatrix}, B = \begin{bmatrix} 2 & -3 \\ -2 & 0 \\ -1 & -2 \end{bmatrix}$

7] Solving The System using The matrices

$$\begin{aligned} \text{a] } x + 2y &= 5 \\ y - 3z &= 5 \\ 3x - z &= 4 \end{aligned}$$

$$\begin{aligned} \text{b] } 4x + 3y &= 4 \\ 2x + 2y - 2z &= 0 \\ 5x + 3y + z &= -2 \end{aligned}$$

$$\begin{aligned} \text{c] } x + y + z &= 4 \\ x + 2y + 4z &= 12 \\ 2x - 3y - z &= 4 \end{aligned}$$

$$\begin{aligned} \text{d] } 2a + 3b + 11c + 5d &= 2 \\ a + b + 5c + 2d &= 1 \\ 2a + b - 3c + 2d &= -3 \\ a + b - 3c + 4d &= -3 \end{aligned}$$