

Matrices

1. Given : $A = \begin{bmatrix} -3 & 5 \\ 4 & 2 \end{bmatrix}$, $B = \begin{bmatrix} 8 & 3 \\ -2 & -4 \end{bmatrix}$, $C = \begin{bmatrix} -5 & -7 \\ 2 & 2 \end{bmatrix}$

- a) $A + B - C$ b) $3A + 2B$
 c) C^T d) $A * B + C$
 e) B^{-1} f) ∂A

2. Solve:

a) $3 \begin{bmatrix} 4 & 1 \\ -2 & 7 \end{bmatrix} + 5 \begin{bmatrix} a & c \\ b & d \end{bmatrix} = -4 \begin{bmatrix} -2 & 6 \\ 5 & -4 \end{bmatrix}$

b) $5x + 2y = 9$
 $-4x + 7y = -4$

c) $4x + 2y - 3x + 5w = -6$
 $-2x + y + 4z - 3w = 2$
 $5x + 7y - 4z + w = -3$
 $x + 2y - z + 3w = 8$

3. Multiply the following:

a) $\begin{bmatrix} 4 & 1 & -4 \\ -2 & -7 & 3 \end{bmatrix} \begin{bmatrix} 8 & 5 \\ -2 & -1 \\ 3 & 6 \end{bmatrix}$

b) $\begin{bmatrix} 5 & 0 & 2 \\ -2 & 7 & -3 \\ 1 & -3 & 1 \end{bmatrix} \begin{bmatrix} 5 & 1 & 5 \\ -2 & -4 & 3 \\ 3 & 2 & -4 \end{bmatrix}$

4. Determine the value of the determinant using the indicated method:

a) diagonal $\begin{vmatrix} 4 & 3 & 8 \\ -6 & -5 & 4 \\ 2 & -2 & -1 \end{vmatrix}$

b) expansion by minors $\begin{vmatrix} 7 & -2 & 8 \\ -3 & 1 & 4 \\ 2 & 4 & -5 \end{vmatrix}$

c) properties of determinants $\begin{vmatrix} 12 & -4 & -7 \\ -8 & 6 & 11 \\ 5 & 13 & -8 \end{vmatrix}$