Addition of Matrices

Matrices of some type can be added by adding corresponding element.

$$A = \begin{bmatrix} 2 & 3 & 5 \\ 1 & 9 & 6 \end{bmatrix}_{2 \times 3} \qquad B = \begin{bmatrix} 1 & 3 & 8 \\ 2 & 6 & 5 \end{bmatrix}_{2 \times 3}$$

$$A + B = \begin{bmatrix} 2+1 & 3+3 & 5+8 \\ 1+2 & 9+6 & 6+5 \end{bmatrix} = \begin{bmatrix} 3 & 6 & 13 \\ 3 & 15 & 11 \end{bmatrix}$$

Subtraction of Matrices

$$A = \begin{bmatrix} 2 & 3 & 5 \\ 1 & 9 & 6 \end{bmatrix}_{2 \times 3} \qquad B = \begin{bmatrix} 1 & 3 & 8 \\ 2 & 6 & 5 \end{bmatrix}_{2 \times 3}$$

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

Multiplication of a Matrix by a Scalar

If A is any $m \times n$ matrix and k be a scalar. The $m \times n$ matrix obtain by multiplying every element of the matrix A by k is called the scalar multiple of A by k and is denoted by kA

let
$$A = \begin{bmatrix} 2 & 3 & 5 \\ 1 & 4 & 3 \end{bmatrix} \qquad 2A = \begin{bmatrix} 4 & 6 & 10 \\ 2 & 8 & 6 \end{bmatrix}$$