

Matrix Operations

Addition of Matrices

If $A=[a_{ij}]$ and $B=[b_{ij}]$ are matrices of the same size then their sum $A+B$ is the matrix obtained by adding corresponding elements of A and B ,

$$A+B=[a_{ij}+b_{ij}]$$

Multiplication of a Matrix by a Number

If $A=[a_{ij}]$ is a matrix and c is a number then cA is the matrix obtained by multiplying each element of A by c ,

$$cA=[ca_{ij}]$$

Matrix Multiplication

Suppose that $A=[a_{ij}]$ is an $n \times p$ matrix and $B=[b_{ij}]$ is a $p \times m$ matrix. Then the product AB is an $n \times m$ matrix such that the element of AB in its i th row and j th column is the sum of products of corresponding elements of the i th row of A and the j th row of B ,

$$AB=[c_{ij}]=[a_{i1}b_{1j}+ a_{i2}b_{2j} + \dots + a_{ip}b_{pj}]$$