Matrices

Matrix

It is an ordered rectangular arrangement of number or function which are represented as

$$A = \begin{bmatrix} a_{11} & a_{12} & \cdots & a_{1n} \\ a_{21} & a_{22} & \cdots & a_{2n} \\ \vdots & \vdots & \ddots & \vdots \\ a_{m1} & a_{m2} & \cdots & a_{mn} \end{bmatrix}$$

- Matrix is enclosed by [ ] or ( ).
- It is also represented as $A = [a_{ij}]$, where i and j are the row and column number.

Order Of A Matrix

For a matrix with **m** rows and columns, order is **m x n** , read as 'm by n'

Types Of Matrices

1. **Row matrix :** Matrix with one row

   For e.g., $A = \begin{bmatrix} 1 & 2 & 3 \end{bmatrix}$

2. **Column matrix :** Matrix with one column

   For e.g., $A = \begin{bmatrix} 91 \\ 82 \end{bmatrix}$

3. **Square matrix :** Matrix with equal number of rows and columns

   For e.g., $A = \begin{bmatrix} 2 & 1 \\ 5 & 6 \end{bmatrix}$

4. **Rectangular matrix :** Matrix with unequal number of rows and columns

   For e.g., $A = \begin{bmatrix} 1 & 2 & 3 \\ 4 & 6 & 7 \end{bmatrix}$

5. **Diagonal matrix :** Square matrix with non-diagonal elements equal to zero.

   For e.g., $A = \begin{bmatrix} 9 & 0 \\ 0 & 11 \end{bmatrix}$ or $\begin{bmatrix} 4 & 0 & 0 \\ 0 & 6 & 0 \\ 0 & 0 & 8 \end{bmatrix}$