

## Key Takeaways

- A rectangular arrangement of  $m \cdot n$  numbers (real or complex) or expressions (real or complex valued), having  $m$  rows and  $n$  columns is called a matrix. ( $m, n \in N$ )

$$A = \begin{bmatrix} a_{11} & a_{12} & a_{13} & \cdots & a_{1n} \\ a_{21} & a_{22} & a_{23} & \cdots & a_{2n} \\ \vdots & \vdots & \vdots & & \vdots \\ a_{m1} & a_{m2} & a_{m3} & \cdots & a_{mn} \end{bmatrix}$$

Diagram illustrating the structure of a matrix  $A$  with  $m$  rows and  $n$  columns. The elements are arranged in a grid. The first row is labeled  $a_{11}, a_{12}, a_{13}, \dots, a_{1n}$ . The second row is labeled  $a_{21}, a_{22}, a_{23}, \dots, a_{2n}$ . The third row is labeled  $\vdots, \vdots, \vdots, \vdots$ . The last row is labeled  $a_{m1}, a_{m2}, a_{m3}, \dots, a_{mn}$ . Arrows point from the labels "Rows" and "Columns" to the corresponding dimensions of the matrix.

- An element of a matrix is denoted by  $a_{ij}$ : Element of  $i^{th}$  row &  $j^{th}$  column.