# Complex No:

A number of the form $a+ib$, where $a, b \in R$ is called complex number.

**e.g**

$2+3i$, $4+5i$, $5-2i$, $1+i$, $1-i$, $1+3i$, $7+2i$

## Imaginary No:

A number of the form "$ib$" where "$b$" is real is called an imaginary number.

**e.g**

$3i, 5i, 7i, \sqrt{5}i, \sqrt{7}i, \sqrt{18}i$ - -

# Argument of Complex No.

Angle between real axis and the line joining complex no. to origin is called argument of a complex number.

# Conjugate of Complex No.

If $z = a+ib$ then its conjugation is

$$z^{*} = \bar{z} = a-ib$$

# Polynomials(function)

A function of the form

$P(x) = 3x^3 - x^2 + 4x - 1$ [cubic Polynomial Degree 3]

$P(x) = x^2 - 4x + 5$ [Quadratic poly- Degree 2]

$P(x) = 2x + 3$ [Linear polynomial Degree 1]

$P(x) = 5$ (Degree 0 constant]

## Remainder Theorem:

When a polynomial $P(x)$ is divided by $x-a$, then remainder is given;

$$R = P(a).$$

## Factor theorem:

When a polynomial $P(x)$ is divided by $x-a$ &

$$R = P(a) = 0$$

then $x-a$ will be factor of $P(x)$.

**Equation:** An *equation* is a statement that two expressions are equal, i.e. two expressions are joined by a sign of equality (=).

For example, if $x+2$ and $2x-5$ are equal, then we write this fact in the following equation form

$$x+2=2x-5$$

**Quadratic Equation:** An equation of the form $ax^2 + bx + c = 0$, where $a \neq 0$ is called the *quadratic equation*. The values of $x$ satisfying the quadratic equation are called its *solutions* or *roots*.

For example, $3x^2 + 2x + 1 = 0$, $x^2 - 2 = 0$, $7x^2 + 9x + 3 = 0$ all are quadratic equations. But $x + 9 = 0$ is not quadratic equation. In the following we discuss the methods for finding the solutions of quadratic equations.

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