# Ch-2 Polynomials

- degree of polynomial → highest power of $x$ in a polynomial $p(x)$.

  degree ⇒ 1 ⇒ linear
  2 ⇒ quadratic
  3 ⇒ cubic

- zeroes of polynomial → values of $x$ such that it realisates the polynomial $p(x) = 0$.

  Or

  graphically, the total no. of times the graph of polynomial $p(x)$ cuts the $x$-axis.

- in general, quadratic poly. has 3 cases –
  (i) two distinct roots
  (ii) single root
  (iii) no root

- polynomial of degree $p(x)$ of degree $n$ has utmost $n$ zeroes.

- if $\alpha$ & $\beta$ are the zeroes of polynomial, $p(x) = ax^2 + bx + c$, then

$$\alpha + \beta = \frac{-b}{a}$$

$$\alpha\beta = \frac{c}{a}$$

- if $\alpha$, $\beta$ & $\gamma$ are the zeroes of the cubic polynomial, $p(x) = ax^3 + bx^2 + cx + d$

$$\alpha + \beta + \gamma = \frac{-b}{a}$$

$$\alpha\beta + \beta\gamma + \gamma\alpha = \frac{c}{a}$$

$$\alpha\beta\gamma = \frac{-d}{a}$$