



Class 9
Important Formulas

Chapter 2 - Polynomial Expressions

A polynomial expression $S(x)$ in one variable x is an algebraic expression in x term as

$$S(x) = a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \dots + ax + a_0$$

Where $a_n, a_{n-1}, \dots, a, a_0$ are constant and real numbers and a_n is not equal to zero

Some Important point to Note

| S.no | Points |
|------|---|
| 1 | $a_n, a_{n-1}, a_{n-2}, \dots, a_1, a_0$ are called the coefficients for $x^n, x^{n-1}, \dots, x^1, x^0$ |
| 2 | n is called the degree of the polynomial |
| 3 | when $a_n, a_{n-1}, a_{n-2}, \dots, a_1, a_0$ all are zero, it is called zero polynomial |
| 4 | A constant polynomial is the polynomial with zero degree, it is a constant value polynomial |
| 5 | A polynomial of one item is called monomial, two items binomial and three items as trinomial |
| 6 | A polynomial of one degree is called linear polynomial, two degree as quadratic polynomial and degree three as cubic polynomial |

Important concepts on Polynomial

| Concept | Description |
|--|--|
| Zero's or roots of the polynomial | <p>It is a solution to the polynomial equation $S(x)=0$ i.e. a number "a" is said to be a zero of a polynomial if $S(a) = 0$.</p> <p>If we draw the graph of $S(x) =0$, the values where the curve cuts the X-axis are called Zeros of the polynomial</p> |
| Remainder Theorem's | <p>If $p(x)$ is an polynomial of degree greater than or equal to 1 and $p(x)$ is divided by the expression $(x-a)$, then the remainder will be $p(a)$</p> |
| Factor's Theorem's | <p>If $x-a$ is a factor of polynomial $p(x)$ then $p(a)=0$ or if $p(a) =0$, $x-a$ is the factor the polynomial $p(x)$</p> |