

CBSE Class–10 Mathematics

Revision Notes

CHAPTER 02

POLYNOMIALS

1. Geometrical Meaning of the Zeroes of a Polynomial
2. Zeroes and Coefficients of a Polynomial
3. Division Algorithm for Polynomials

1. **Monomials:** Algebraic expression with one term is known as Monomial.
2. **Binomial:** Algebraic expression with two terms is called Binomial.
3. **Trinomial:** Algebraic expression with three terms is known as Trinomial.
4. **Polynomials:** All above mentioned algebraic expressions are called Polynomials.
5. Polynomials of degrees 1, 2 and 3 are called linear, quadratic and cubic polynomials respectively.
6. A quadratic polynomial in x with real coefficient is of the form $ax^2 + bx + c$, where a, b, c are real numbers with $a \neq 0$.
7. The zeroes of a polynomial $p(x)$ are precisely the x -coordinates of the points where the graph of $y = p(x)$ intersects the x -axis i.e. $x = a$ is a zero of polynomial $p(x)$ if $p(a) = 0$.
8. A polynomial can have at most the same number of zeros as the degree of polynomial.
9. For quadratic polynomial $ax^2 + bx + c$ ($a \neq 0$)

$$\text{Sum of zeroes} = -\frac{b}{a}$$

$$\text{Product of zeroes} = \frac{c}{a}$$

10. In a cubic polynomial $ax^3 + bx^2 + cx + d$, if α, β, γ are the zeroes of the polynomial, then

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

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

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

11. The division algorithm states that given any polynomial $p(x)$ and polynomial $g(x)$, there

are polynomials $q(x)$ and $r(x)$ such that :

$$p(x) = g(x) \cdot q(x) + r(x), \quad g(x) \neq 0$$

where $r(x) = 0$ or degree of $r(x) < \text{degree of } g(x)$.

Or Dividend = Divisor x Quotient + Remainder

If $r(x) = 0$, then $p(x)$ is said to be completely divisible by $g(x)$, i.e., $g(x)$ is a factor of $p(x)$.