

**POLYNOMIALS**

- 1) Find a quadratic polynomial, the sum and product of whose zeroes are  $\frac{1}{4}$ ,  $-1$ .
- 2) Find the quadratic polynomial whose zeroes are  $\sqrt{2} + 3$  and  $\sqrt{2} - 3$ .
- 3) If  $\alpha$  and  $\beta$  are the zeroes of the polynomial  $P(x) = x^2 - px + q$  then find the value of  $\frac{1}{\alpha} + \frac{1}{\beta}$ .
- 4) Divide the polynomial  $p(x) = x^3 - 3x^2 + 5x - 3$  by the polynomial  $g(x) = x^2 - 2$  and find the quotient and remainder.
- 5) Find the zeroes of  $6x^2 - 3 - 7x$  and verify the relationship between the zeroes and the coefficients of the polynomial.
- 6) Find the zeroes of the quadratic polynomial  $t^2 - 15$  and verify the relationship between the zeroes and the coefficients.
- 7) Find a quadratic polynomial with  $-\frac{1}{4}$  as the sum and  $\frac{1}{4}$  as product of its zeroes.
- 8) Divide  $6x^4 - 44x^2 + 6x - 3$  by  $x^2 - 3x + 1$  and verify the division algorithm.
- 9) Find the zeroes of the polynomial  $x^2 + 7x - 8$ , and verify the relationship between the zeroes and the coefficients.
- 10) Obtain all the zeroes of the polynomial  $x^4 - 6x^3 - 26x^2 + 138x - 35$ , if two of its zeroes are  $2 + \sqrt{3}$  and  $2 - \sqrt{3}$ .
- 11) Find all other Zeroes of the polynomial  $x^4 - 2x^3 - 26x^2 + 54x - 27$  if two of its zeroes are  $3\sqrt{3}$  and  $-3\sqrt{3}$ .
- 12) If  $\sqrt{2}$  and  $-\sqrt{2}$  are two of the zeroes of the polynomial  $x^4 + 2x^3 - 5x^2 - 4x + 6$ , find all the zeroes of the polynomial.
- 13) On dividing  $x^3 - 3x^2 + x + 2$  by a polynomial  $g(x)$ , the quotient and remainder were  $x - 2$  and  $-2x + 4$ , respectively. Find  $g(x)$ .
- 14) If the zeroes of the polynomial  $x^3 - 3x^2 + x + 1$  are  $a - b$ ,  $a$ ,  $a + b$ , find  $a$  and  $b$ .
- 15) If the polynomial  $x^4 - 6x^3 + 16x^2 - 25x + 10$  is divided by another polynomial  $x^2 - 2x + k$ , the remainder comes out to be  $x + a$ , find  $k$  and  $a$ .