CLASS X
SAMPLE PAPER
MATHS

POLYNOMIAL

POINTS TO REMEMBER:-

01. **Degree of polynomial:** If p(x) is a polynomial in x , the highest power of x in p(x) is called the degree of the polynomial.

02. **Linear polynomial:** A polynomial of degree 1.

03. **Quadratic polynomial:** A polynomial of degree 2.

04. **Cubic polynomial:** A polynomial of degree 3.

05. **Constant polynomial:** A polynomial of degree zero.

06. **Zero of polynomial:** A real number k is said to be zero of a polynomial p(x) , if p(k) = 0.

07. Geometrical meaning of zero of polynomial: The graph of a ***linear polynomial*** is a straight line and it cut X- axis at exactly one point. The graph of a ***Quadratic polynomial*** is a parabola which cuts X- axis at most two points.

9. **Relationship between zeros and coefficients:**

$$\text{Sum of Zeros} = \frac{\text{Coefficient of } x}{\text{Coefficient of } x^2}$$

Questions:

1. Find the zeros of the quadratic polynomial $x^2 + 7x + 10$, and verify the relationship between the zeros and the coefficients.

2. Find the zeros of the quadratic polynomial $x^2 - 3$, and verify the relationship between the zeros and the coefficients.

3. Find a quadratic polynomial , the sum and product of whose zeroes are $\sqrt{3}$ and 2, respectively.

4. If 2 and 3 are the zeros of the quadratic polynomial $3x^2 - 2kx + 2m = 0$, find the values of k and m.

5. Find a quadratic polynomial, the sum and product of whose Zeros are

$$\frac{2+\sqrt{5}}{2} \text{ and } \frac{2-\sqrt{5}}{2}$$

6. If the sum and product of Zeros of the quadratic polynomial $ax^2 – 5x + c = 0$ are both equal to 10, find the value of a and c.

7. One zero of the quadratic polynomial $2x^2 – 8x - k = 0$ is 5/2 . Find the other zero and the value of k.

8. Find all the zeroes of $2x^4 – 3x^3 – 3x^2 + 6x – 2$, if to its zeroes are $\sqrt{2}$ and $-\sqrt{2}$

9. What must be added to $6x^5 + 5x^4 + 11x^3 – 3x^2 + x + 1$, so that the polynomial so obtained is exactly divisible by $3x^2 – 2x + 4$?

10. What must be subtracted from $2x^4 - 11x^3 + 29x^2 - 40x + 29$, so that the polynomial so obtained is exactly divisible by $x^2 – 3x + 4$?

11. Find the value of k so that $6x^3 + x^2 – 19x + k$ is exactly divisible by x+2.

12. The sum and product of zeroes of a quadratic polynomial are -1/2 and -3 respectively. What is the quadratic polynomial?

13. If two Zeroes of the polynomial $x^4 + 3x^3 – 20x^2 – 6x + 36$ are $\sqrt{2}$ and $-\sqrt{2}$, find the other zeroes of the polynomial.

14. Find the zeros of the quadratic polynomial $x^2 - 2x - 8$, and verify the relationship between the zeros and the coefficients.

15. Obtain all other Zeroes of $3x^4 + 6x^3 – 2x^2 – 10x – 5$, if two of its zeroes are $\sqrt{5/3}$ and $-\sqrt{5/3}$

16. What must be subtracted from $8x^4 + 14x^3 - 2x^2 + 7x - 8$, so that the polynomial so obtained is exactly divisible by $4x^2 + 3x - 2$?

17. If the sum of the zeroes of the quadratic polynomial $x^2 – 8x + k$ is 40, find the value of k.

18. if the polynomial $x^4 - 6x^3 + 16x^2 - 25x + 10$ is divided by another polynomial x2 -2x + k, the remainder comes out to be x + a , find k and a.

19. 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).

20. If two of the zeroes of the polynomial $x^4 - 6x3 – 26x^2 + 138x – 35$ are $2 \pm \sqrt{3}$, find other zeroes.

21. Find the zeros of the polynomial $x^2 + 7x + 12$, and verify the relationship between the zeroes and its coefficients.

22. If α and β are zeroes of the polynomial $f(x) = kx^2 + 4x + 4$, such that $\alpha^2 + \beta^2 = 24$, find the value of k.

23. Find the zeroes of the polynomial $f(x) = abx^2 + (b^2 – ac)x – bc$, and verify the relationship between the zeroes and its coefficients.

24. If the sum of the squares of zeroes of the polynomial $x^2 - 8x + k$ is 40, find the value of k.

25. If α , β are the zeroes of the polynomial $2x^2 + 5x + k$ satisfying the relation $\alpha^2 + \beta^2 + \alpha\beta = 21/4$, then find the value of k for this to be possible.