SmartKalike

CBSE Class 10 · Maths

Polynomials

10 most probable questions for Boards 2027

Q1. 1 mark · Very short answer

How many zeroes at most can a polynomial of degree n have?

Answer

A polynomial p(x) of degree n has at most n zeroes, since its graph y = p(x) intersects the x-axis at at most n points.

Q2. 2 marks · Short answer

Define the degree of a non-zero polynomial in one variable.

Answer

The degree of a non-zero polynomial in one variable is the highest power of its variable with a non-zero coefficient. For example, $5x^3 - 4x^2 + x - 2$ has degree 3.

Q3. 3 marks · Medium answer

If α, β and γ are the zeroes of $ax^3 + bx^2 + cx + d$, where $a \neq 0$, state the relations for (i) α + β + γ, (ii) αβ + βγ + γα, and (iii) αβγ.

Answer

1. For $ax^3 + bx^2 + cx + d$, where $a \neq 0$, with zeroes α, β and γ, their sum is $\alpha + \beta + \gamma = -b/a$.
2. The sum of products taken two at a time is $\alpha\beta + \beta\gamma + \gamma\alpha = c/a$.
3. The product of the three zeroes is $\alpha\beta\gamma = -d/a$, the negative ratio of constant term d to leading coefficient a.

Q4. 5 marks · Long answer

(5 marks) (a) State the general form of a cubic polynomial in x and the conditions on its coefficients. (b) Explain how p(k) is defined for a polynomial p(x). (c) State the condition that a real number k must satisfy to be a zero of p(x).

Answer

Polynomials are classified by their degree, and their values depend on the number substituted for the variable.

1. The general form of a cubic polynomial in x is $ax^3 + bx^2 + cx + d$, where a, b, c and d are real numbers and $a \neq 0$. The non-zero coefficient a makes the highest power of x equal to 3.

2. The value p(k) is obtained by replacing x by any real number k in p(x). This value is denoted by p(k).

3. A real number k is a zero of p(x) precisely when p(k) = 0. Thus, substitution of k into the polynomial must give zero.

The cubic form and the condition p(k) = 0 specify the polynomial's degree and its zeroes,

respectively.

Q5. 1 mark · Very short answer

For $y = ax^2 + bx + c$, state whether the parabola opens upwards or downwards when $a > 0$ and when $a < 0$.

Answer

When $a > 0$, the parabola opens upwards; when $a < 0$, it opens downwards.

Q6. 2 marks · Short answer

Name the types of polynomials of degrees 1, 2 and 3, respectively.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/polynomials

Q7. 3 marks · Medium answer

Explain the relationship between the zeroes of a polynomial $p(x)$ and the graph of $y = p(x)$. In your answer, state what the x-coordinates of the graph's intersections with the x-axis represent.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/polynomials

Q8. 1 mark · Very short answer

For a quadratic polynomial $ax^2 + bx + c$ with zeroes α and β, write the formula for $\alpha + \beta$.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/polynomials

Q9. 2 marks · Short answer

Write the general form of a quadratic polynomial in x and state the condition on its leading coefficient.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/polynomials

Q10. 1 mark · Multiple choice

If the sum and product of the zeroes of a quadratic polynomial are S and P, respectively, which is one such polynomial?

(A) $x^2 + Sx + P$

(B) $x^2 - Sx + P$

(C) $x^2 + Px - S$

(D) $x^2 - Px - S$

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