



Worksheet: Chapter 2 – Polynomials

Class 10 – Mathematics (CBSE)

Chapter Name: Polynomials

Max Marks: 30

Time: 1 Hour

Section A: Multiple Choice Questions (MCQs)

(Each question carries 1 mark)

1. If α and β are the zeros of the polynomial $2x^2 - 4x + 3$, then the sum of the zeros is: a) 2
b) -2
c) 4
d) -1
2. The degree of the polynomial $p(x) = 4x^3 + 3x^2 + 2x + 7$ is:
a) 1
b) 2
c) 3
d) 4
3. If $p(x) = x^2 - 5x + 6$, then the product of its zeros is:
a) -5
b) 6
c) -6
d) 5

4. The graph of the polynomial $p(x) = x^2 - 4$ will intersect the x-axis at:
- a) 1 point
 - b) 2 points
 - c) No points
 - d) Infinite points
5. If the sum of the zeros of the quadratic polynomial $p(x) = ax^2 + bx + c$ is 3 and the product of the zeros is -4, then the polynomial is:
- a) $x^2 - 3x - 4$
 - b) $x^2 + 3x - 4$
 - c) $x^2 - 3x + 4$
 - d) $x^2 + 3x + 4$
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Section B: Short Answer Type Questions (2 Marks Each)

6. Find the zeros of the quadratic polynomial $p(x) = x^2 - 7x + 10$.
7. Find a quadratic polynomial whose zeros are -4 and 5.
8. Verify whether the following are zeros of the polynomial $p(x) = 2x^2 - 3x - 5$:
- (i) $x = -1$
 - (ii) $x = \frac{5}{2}$
9. For the quadratic polynomial $p(x) = 4x^2 - 8x + 3$, find the sum and product of its zeros.
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Section C: Long Answer Type Questions (3 Marks Each)

10. The sum and product of the zeros of a quadratic polynomial are -7 and 10, respectively. Find the quadratic polynomial.
 11. Find the zeros of the polynomial $p(x) = x^2 - 4x + 4$, and verify the relationship between the zeros and the coefficients.
 12. Draw the graph of the polynomial $p(x) = x^2 - 6x + 9$. How many times does the graph touch or intersect the x-axis?
 13. If $p(x) = x^2 - (k + 6)x + 2(2k + 1)$ has 2 and -1 as its zeros, find the value of k .
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Section D: Long Answer Type Questions (4 Marks Each)

14. If the zeros of the polynomial $p(x) = 2x^2 + bx + c$ are α and β , prove that:
 - (i) $\alpha + \beta = -\frac{b}{2}$
 - (ii) $\alpha \times \beta = \frac{c}{2}$
 15. Find the quadratic polynomial whose sum of zeros is 0 and product of zeros is -12. Also, draw the graph of the polynomial and find where it intersects the x-axis.
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Section E: Case Study (5 Marks)

Case Study: Understanding the Graph of Quadratic Polynomials

Problem:

A student was tasked with drawing the graph of the quadratic polynomial $p(x) = x^2 - 5x + 6$.

- The student observes that the graph intersects the x-axis at two points.
 - Using the relationship between zeros and coefficients, answer the following:
16. What are the zeros of the polynomial?
 17. What is the sum and product of these zeros?
 18. How does the sum of the zeros relate to the coefficient of x ?
 19. How many times does the graph intersect the x-axis?
 20. Sketch the graph of $p(x) = x^2 - 5x + 6$.
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Answer Key:

Section A (MCQs):

1. b) -2
2. c) 3
3. b) 6
4. b) 2 points
5. a) $x^2 - 3x - 4$