Worksheet 2: 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. The zeros of the quadratic polynomial $p(x) = x^2 - 3x + 2$ are:
   a) -2, 1
   b) 1, 2
   c) 2, 3
   d) -1, -2
2. The sum of the zeros of the polynomial $p(x) = 3x^2 - 5x + 4$ is:
   a) 3
   b) $\frac{5}{3}$
   c) $-\frac{5}{3}$
   d) $\frac{5}{4}$
3. The degree of the polynomial $p(x) = 7x^3 - 2x^2 + 5x - 1$ is:
   a) 1
   b) 2
   c) 3
   d) 4

4. If the product of the zeros of a quadratic polynomial $p(x) = ax^2 + bx + c$ is 8, then the value of c/a is:
   a) -8
   b) 8
   c) 4
   d) -4
5. If the polynomial $p(x) = 2x^2 - 5x + k$ has sum of its zeros equal to 5, then the value of k is:
   a) 2
   b) 3
   c) 5
   d) 10

Section B: Short Answer Type Questions (2 Marks Each)

6. Find the zeros of the quadratic polynomial $p(x) = x^2 - 9x + 14$.
7. If α and β are the zeros of the polynomial $p(x) = 2x^2 - 3x - 5$, find the sum and product of α and β.
8. Write the quadratic polynomial whose sum and product of zeros are 4 and -1, respectively.
9. For the polynomial $p(x) = 3x^2 - 2x - 4$, verify the relationship between the zeros and the coefficients.

Section C: Long Answer Type Questions (3 Marks Each)

10. The zeros of a polynomial are -2 and 3. Find the quadratic polynomial.
11. Find the zeros of the quadratic polynomial $p(x) = 2x^2 - 4x + 2$, and verify the relationship between the zeros and coefficients.
12. If α and β are the zeros of the polynomial $p(x) = x^2 - 7x + 10$, find a quadratic polynomial whose zeros are $1/\alpha$ and $1/\beta$.
13. Solve $p(x) = x^2 - 4x - 5$ for its zeros and verify the sum and product of the zeros.

Section D: Long Answer Type Questions (4 Marks Each)

14. If the sum and product of the zeros of a quadratic polynomial are 3 and -4 respectively, find the quadratic polynomial. Also, verify the sum and product of the zeros.
15. For the polynomial $p(x) = x^2 - 11x + 30$, find its zeros and verify the relationship between the zeros and coefficients. Draw the graph of this polynomial.

Section E: Case Study (5 Marks)

Case Study: Relationship between Zeros and Coefficients

Problem:
A teacher gave the quadratic polynomial $p(x) = x^2 - 4x + 3$ to students and asked them to solve for the zeros of the polynomial.

- The zeros of the polynomial are real numbers.
- The graph intersects the x-axis at two distinct points.

16. Find the zeros of the polynomial.
17. What is the sum of the zeros?
18. What is the product of the zeros?
19. How many times does the graph intersect the x-axis?
20. Sketch the graph of $p(x)$.

Answer Key:

Section A (MCQs):

1. b) 1, 2
2. c) $-\frac{5}{3}$
3. c) 3
4. b) 8
5. a) 2