

Unit 2: Polynomial Functions

ADVANCED · SET 2

Name: _____ Date: _____

Show all work. Give each answer as a single exact value (integer, fraction like $\frac{3}{4}$, or coordinate pair) with no units unless asked.

1. Expand $(2x^2 - 3x + 4)(x^2 + 5x - 6)$ and state the coefficient of the x^2 term.

Answer: _____

3. The polynomial $x^3 - 6x^2 + 11x - 6$ has three real zeros. Find the sum of all its zeros.

Answer: _____

5. Divide $x^3 - 4x^2 + 6x - 4$ by $(x - 2)$ to get a quotient $q(x)$. Evaluate $q(0)$.

Answer: _____

7. Factor $x^3 - 7x^2 + 14x - 8$ completely over the integers and state its largest zero.

Answer: _____

9. The polynomial $x^4 - 10x^2 + 9$ factors completely over the integers. Find the sum of its positive zeros.

Answer: _____

11. A monic cubic polynomial (leading coefficient 1) has zeros 3, -1, and 2. When written in standard form, find the coefficient of the x term.

Answer: _____

2. Use the Remainder Theorem to find the remainder when $p(x) = 2x^4 - 5x^3 + 3x^2 - 7x + 10$ is divided by $(x - 3)$.

Answer: _____

4. For the polynomial $3x^4 - 2x^3 + x^2 - 8x + 12$, find the product of its four zeros (use the relationship between coefficients and zeros).

Answer: _____

6. Given that $(x + 2)$ is a factor of $x^3 + kx^2 - 4x - 12$, find the value of k .

Answer: _____

8. Expand $(x^2 - 3x + 5)^2$ and state the constant term.

Answer: _____

10. Find the remainder when $6x^3 + 11x^2 - 4x - 4$ is divided by $(2x + 1)$.

Answer: _____

12. Evaluate $p(x) = x^5 - 3x^4 + 2x^3 - x + 6$ at $x = -1$.

Answer: _____