

Unit 2: Polynomial Functions

CONCEPT

Name: _____ Date: _____

Show all your work. Write each answer as a single exact value.

1. Add the polynomials: $(3x^2 + 2x + 5) + (x^2 + 4x + 1)$. Write the result in standard form.

Answer: _____

2. Subtract: $(5x^2 + 7x + 9) - (2x^2 + 3x + 4)$. Write the result in standard form.

Answer: _____

3. Multiply the monomial by the binomial: $2x(x + 3)$. Write the result in standard form.

Answer: _____

4. What is the degree of the polynomial $4x^3 + 2x^2 + x + 7$?

Answer: _____

5. What is the leading coefficient of the polynomial $-6x^4 + 3x^2 + 8$?

Answer: _____

6. Evaluate the polynomial $P(x) = x^2 + 2x + 1$ at $x = 3$. Find $P(3)$.

Answer: _____

7. The factored form of a polynomial is $(x - 4)(x + 2)$. List its zeros (the x -values where the polynomial equals 0), smaller value first.

Answer: _____

8. A polynomial has zeros at $x = 5$ and $x = -1$. If $x = 5$ is a zero, then $(x - 5)$ is a factor. What is the other factor coming from the zero $x = -1$? Write it as $(x + a)$ or $(x - a)$.

Answer: _____

9. Factor out the greatest common factor: $6x^2 + 9x$. Write the result as a product.

Answer: _____

10. Multiply the two binomials: $(x + 2)(x + 5)$. Write the result in standard form.

Answer: _____

11. Evaluate $P(x) = x^3 - 2x$ at $x = 2$ to check whether $x = 2$ is a zero. What is $P(2)$?

Answer: _____

12. How many total zeros (counting multiplicity) does a polynomial of degree 4 have, according to the Fundamental Theorem of Algebra?

Answer: _____