Algebra II Academic
6.1 - 6.4 Study Guide

Name:_____
Date:_____Pd.___

Directions: Identify the degree of each monomial.

1. $3xy^2$

2. 10

Directions: Add or subtract. Write your answer in standard form.

3. $(3x^2 - x + 1) + (3x^3 - x - 3)$

4. $(4x^4 + x^2) - (x^3 - x^2 - 1)$

5. The cost of producing x units of a product can be modeled by $C(x) = \frac{1}{10}x^3 - x^2 + 25$. Evaluate $C(x)$ for $x = 15$, and describe what the value represents.

Directions: Graph each polynomial function on a calculator.

6. $f(x) = -x^4 + 4x^2 + 1$

Describe the graph: _____

X- Intercept(s):_____

Leading coefficient: _____

Degree: _____

Number of terms: _____

Name of polynomial: _____

7. $f(x) = x^3 + 2x^2 + 1$

Describe the graph: _____

X- Intercept(s):_____

Leading coefficient: _____

Degree: _____

Number of terms: _____

Name of polynomial: _____

Directions: Find each product.

8. $xy(2x^4y + x^2y^2 - 3xy^3)$

9. $(x^3 + x^2 + 1)(3x^2 + 6x - 2)$

10. $(2xy + 5y)(3x^2 - 4xy + 2y^2)$

Directions: Divide by using long division.

11. $(6y^2 + 13y - 8) \div (2y - 1)$

12. $(8x^4 + 6x^2 - 2x + 4) \div (2x - 1)$

13. $(2y^4 + 5y^3 + 2y^2 + 6y) \div (2y)$

14. $(x^3 - 5x^2 + 2x - 7) \div (x + 2)$

Directions: Divide by using synthetic division.

15. $(3x^2 - 8x + 4) \div (x - 2)$

16. $(5x^2 - 4x + 12) \div (x + 3)$

17. $(-7x + 9x^2 + 3) \div (x - 1)$

18. $(6x^5 - 3x^2 + x - 4) \div (x - 1)$

Directions: Use synthetic division to evaluate the polynomial for the given value.

19. $P(x) = x^4 + 3x^3 - x^2 + 2x - 6 \; for \; x = 3$

20. $P(x) = -3x^2 + 10x - 4 \; for \; x = -2$

Directions: Determine whether the given binomial is a factor of the polynomial $P(x)$.

21. $(x - 4); P(x) = x^2 + 8x - 48$

22. $(x + 5); P(x) = 2x^2 - 6x - 1$

Factor each completely.

1) $280xy - 105x - 120y^2 + 45y$

2) $x^2 + 14x + 45$

3) $25n^2 - 20n + 4$

4) $x^4 + 27x$

5) $2v^3 + v^2 + 2v + 1$

6) $64n^2 + 112n + 49$

7) $-8x^3 + 27$

8) $7x^3 + x^2$

9) $2a^2 + a - 15$

10) $3a^3 - 16a^2 + 20a$