CP Algebra 3 **Name** _____
Chapter 3 Test Review

Add or subtract. Write your answer in standard form.

1. $(8x^3 - 4x^2 - 3x + 1) - (1 - 5x^2 + x)$

2. $(6x^2 + 7x - 2) + (1 - 5x^3 + 3x)$

Find each product.

3. $5x^2(3x - 2)$

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

5. $ab^2(a^2 - a + ab)$

6. $(2x + 5)(x^3 - x^2 + 1)$

7. $(x - 3)^3$

8. $(2x + 1)^4$

Divide using long division.

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

10. $(8x^4 + 6x^2 - 2x + 4) \div (2x - 1)$

Divide using synthetic division.

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

12. $(x^3 + 2x - 1) \div (x - 2)$

Determine whether the given binomial is a factor of the polynomial, P(x).

13. $(x + 3); P(x) = x^3 + 2x^2 - 5$

14. $(x - 1); P(x) = 4x^4 - 5x^2 + 3x - 2$

15. Use synthetic Substitution to evaluate polynomial f(x) = $3x^4 - x^3 + 2x - 1$ for $x = -2$

Factor each expression.

16. $x^3 - x^2 - 16x + 16$

17. $4x^3 - 8x^2 - x + 2$

18. $81 - 3x^3$

Solve by factoring OR using the reverse binomial method.

19. $16x^2 - 1 = 0$

20. $3x^3 + 3x^2 - 60x = 0$

21. $3x^3 - 26x^2 - 9x = 0$

22. $16x^4 + 16x^3 + 24x^2 + 8x + 1 = 0$

23. $x^3 - 9x^2 + 27x - 27 = 0$

Identify all of the real roots of each equation.

24. $x^3 - 5x^2 + 8x - 4 = 0$

25. $x^3 + 6x^2 + 9x + 2 = 0$

26. $x^3 + 3x^2 + 3x + 1 = 0$

27. $x^4 - 12x^2 + 27 = 0$

Write the simplest polynomial function with the given roots.

28. $-\frac{1}{2}, -2, 3$

29. $-\sqrt{2}, -1$

30. $2, 1 - i$

Solve the equation by finding all roots.

31. $x^3 - x^2 + 4x - 4 = 0$

32. $x^4 - x^2 - 2 = 0$

Without a Calculator

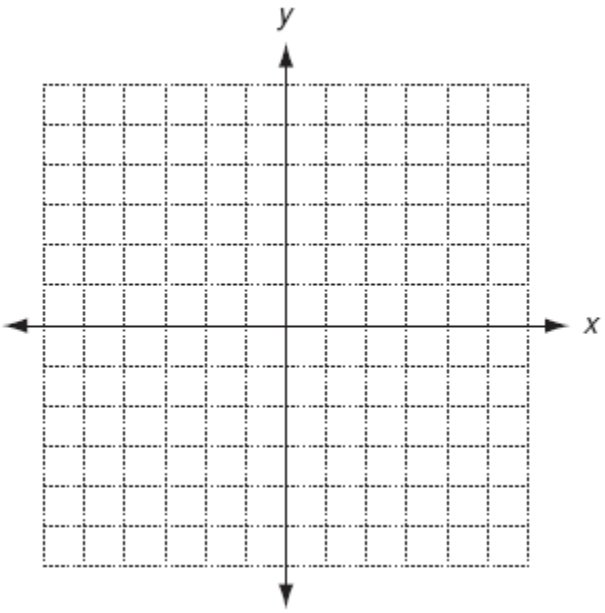
Identify the leading coefficient, degree, and end behavior.

33. $-2x^3 + 5x^2 + 3$

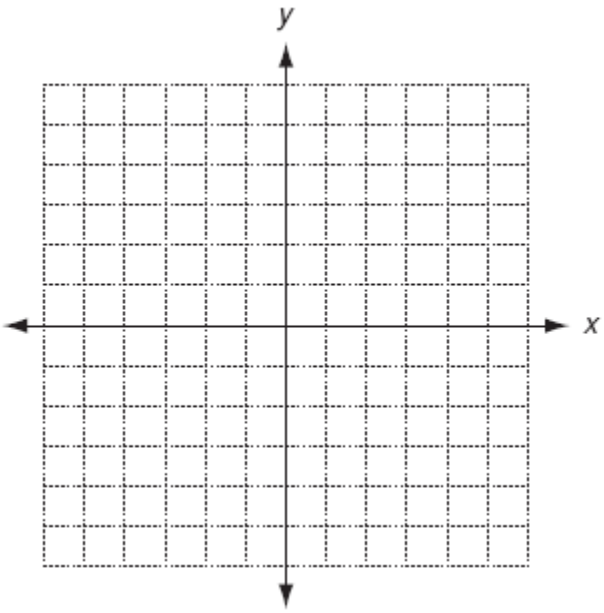
34. $x^4 + 2x^3 - 3x + 1$

Graph each function.

35. $f(x) = x^4 - 10x^2 + 9$



36. $f(x) = -x^3 + 5x^2 + x - 5$

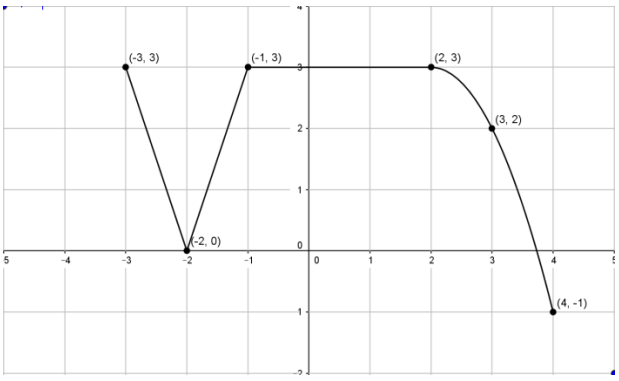


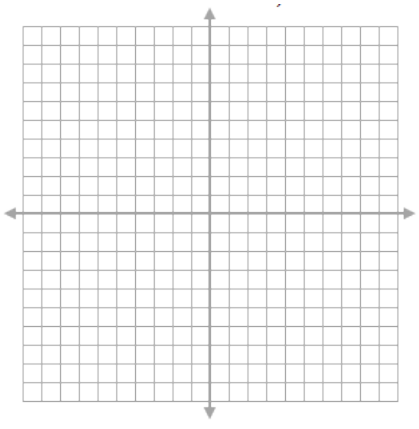
Write a function that transforms $f(x) = x^4 - 6x^2 - 4$ in each of the following ways. Support your solution by using the graphing calculator.

37. Stretch vertically by a factor of 2, and move 9 units up.

38. Move 3 units right, and reflect across the x-axis.

39. Given the graph below, translate it by moving right 3 and reflecting over the y axis.





Polynomial Regression - Review notes and worksheet from class.