Name _____ Block _____ Date _____

Chapter 3 Review

NON-CALCULATOR

1. On a separate piece of paper, thoroughly explain each of the following terms within the context of this chapter:

Binomial	Local maximum	Polynomial
Degree of a polynomial	Local minimum	Synthetic division
End behavior	Monomial	Trinomial
Leading coefficient	Multiplicity	Turning point

Rewrite each polynomial in standard form. Then, identify the leading coefficient, degree, and number of terms. Finally, name the polynomial.

2. $4x^2 - 3x^3 + 6x + 7$

3. $5x^3 - x^5 + 8x + 2x^4$

3. $1 - 11x + 9x^2$

4. $-6x^2 + x^4$

Add or Subtract. Write your answer in standard form.

5. $(8x^3 - 4x^3 + 6x + 7) - (1 - 5x^2 + x)$

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

7. $(5x - 2x^2) - (4x^2 + 6x - 9)$

Find each product.

8. $5x^2(3x - 2)$

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

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

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

12. $(2x + 5)(x^3 - x^2 + 1)$

Divide using long division.

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

14. $(8x^4 + 6x^2 - 2x + 4) \div (2x - 1)$

Divide using synthetic division

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

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

17. A spool of ribbon has a length of $x^3 + x^2$ inches. Write an expression that represents the number of strips of ribbon with a length of $x - 1$ inches that can be cut from one spool.

18. Determine whether $(x - 1)$ is a factor of $P(x) = 4x^4 - 5x^2 + 3x - 2$

Factor each expression below.

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

20. $4x^3 - 8x^2 - x + 2$

Write the simplest polynomial function with the given roots. Leave your answer in factored form.

21. $-3, 2, 4$

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

23. $-3, i$

24. $1 + \sqrt{3}, 2i$

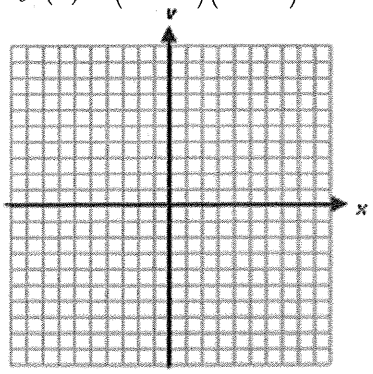
Identify the leading coefficient, degree, and end behavior of the following polynomials.

25. $-3x^6 + 9x^3 - 2x - 9$

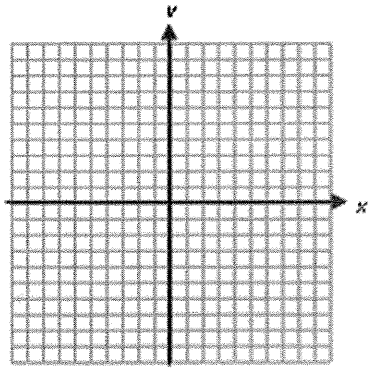
26. $7x^5 + x^4 - 2x^2 + 5$

For 27 & 28, a) factor (or finish factoring) each to find the zeros, b) identify the end behavior, and c) use the answers to parts a and b to sketch the function.

27. $f(x)=(x^2-9)(x^2-1)$



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



Use the description to write each polynomial function in transformation form.

29. $f(x) = x^4$ is stretched vertically by a factor of 2, and is translated 9 units up to create $g(x)$.

30. $f(x) = x^3$ is translated 2 units down and is reflected across the x-axis to create $g(x)$.

31. Give the parent function for $y = 3(x - 2)^5 + 5$. Then, describe the transformations of the parent function.

CALCULATOR

Graph each polynomial function on your calculator and then identify the number of real zeros.

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

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

Identify all of the real roots of each equation.

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

35. $x^3 + 6x^2 + 9x + 2$

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

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

Solve each equation by finding all roots.

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

39. $x^4 - \frac{63}{4}x^2 - 4 = 0$

40. $x^3 + 3x^2 - 5x - 15 = 0$

41. The following chart shows the attendance for a new movie theater over five days. Write a polynomial function for the data.

Day	1	2	3	4	5
Attendance	248	298	318	388	428

42. The following chart shows the population of a city for five years. Write a polynomial function for the data.

Year	1	2	3	4	5
Population (thousands)	1891	2674	3376	4480	6469