

Lesson 5-1**Extra Practice 5.1-5.4**

Write each polynomial in standard form. Then classify it by degree and by number of terms.

1. $a^2 + 4a - 5a^2 - a$

2. $15 - y^2 - 10y - 8 + 8y$

3. $3n^2 + n^3 - n - 3 - 3n^3$

4. $6c^2 - 4c + 7 - 8c^4$

Identify a & n . Then use them to determine the end behavior of the graph of each polynomial function. Must use the notation taught in class. **INCLUDE THE MAXIMUM NUMBER OF TURNS POSSIBLE.**

5. $y = x^2 - 2x + 3$

6. $y = -x^3 - 2x$

7. $y = 7x^5 + 3x^3 - 2x$

8. $y = -x^{12} + 6x^6 - 36$

Lesson 5-2

Write each polynomial in factored form. Check by multiplication.

9. $x^3 + 5x$

10. $x^3 + x^2 - 6x$

11. $6x^3 - 7x^2 - 3x$

Write a polynomial function in standard form with the given zeros.

12. $x = -3, -1, 5$

13. $x = 1, 2, 6$

14. $x = 0, 0, 2, 3$

Find the zeros of each function. Sketch a sloppy.

15. $y = (x + 1)(x - 8)(x + 9)$

16. $y = x(x + 1)^3(x + 5)^2$

17. $y = -x^2(x + 1)$

18. $y = -(x - 3)(x - 4)^2$

Lesson 5-3

Find the real or imaginary solutions of each equation by factoring. Must simplify your answers.

19. $x^3 + 27 = 0$

20. $8x^3 - 125 = 0$

21. $-9x^4 = -48x^2 + 64$

22. $x^4 - 10x^2 + 9 = 0$

23. $2x^4 = 9x^2 - 4$

24. $w^4 - 13w^2 + 36 = 0$

25. $t^3 - 3t^2 - 10t = 0$

26. $3x^3 - x^2 + 12x - 4 = 0$

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

28. $2c^3 - 7c^2 - 4c = 0$

29. $2x^3 + 4x^2 - 3x - 6 = 0$

Lesson 5-4

Use long division to divide.

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

31. $(2x^4 + 10x^3 + 8x) \div (x^2 + 4)$

32. $(x^4 + 3x^3 + x^2 + x - 6) \div (x^2 + 3)$

Use synthetic division to divide.

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

34. $(x^3 + 11x + 12) \div (x + 3)$

35. $(3x^4 + x^3 - 6x^2 - 9x + 12) \div (x + 1)$

36. $(x^4 - 12x^3 - 18x^2 + 10) \div (x + 4)$

Use synthetic division and the given factor to completely factor each polynomial function.

37. $y = x^3 + 3x^2 - 13x - 15; (x + 5)$

38. $y = x^3 - 3x^2 - 10x + 24; (x - 2)$

39. $y = x^3 + 4x^2 - 9x - 36; (x + 3)$

Use synthetic division and the Remainder Theorem to find $P(a)$.

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

41. $P(x) = x^3 + 7x^2 + 12x - 3; a = -5$

42. $P(x) = 2x^4 - 9x^3 + 7x^2 - 5x + 11; a = 4$