pg. 303 # 3-21 x3, 27-45 x3

3. $2m^2 - 3 + 7m$

Standard form: $2m^2 + 7m - 3$

quadratic trinomial

15. use graphing calculator.

L1	L2
-2	-7
-1	0
0	1
1	2
2	9

6: Cubic Reg

$y = 1x^3 + 0x^2 + 0x + 1$

$y = x^3 + 1$

18. use GC. same as 15 but store RegEq in Y_1 then use table.

$y = 1x^3 - 2x^2 + 0x + 0$ (when the scientific notation is that small, you can round to zero)

(17, 4335)

33. $(2c^2 + 9) - (3c^2 - 7)$

$2c^2 + 9 - 3c^2 + 7$

$-1c^2 + 16$ binomial

1. $10x + 5$; linear binomial
2. $-3x + 5$; linear binomial
3. $2m^2 + 7m - 3$; quadratic trinomial
4. $x^4 - x^3 + x$; quartic trinomial
5. $2p^2 - p$; quadratic binomial
6. $3a^3 + 5a^2 + 1$; cubic trinomial
7. $-x^5$; quintic monomial
8. $12x^4 + 3$; quartic binomial
9. $5x^3$; cubic monomial
10. $-2x^3$; cubic monomial
11. $5x^2 + 4x + 8$; quadratic trinomial
12. $-x^4 + 3x^2$; quartic binomial
13. $y = x^3 + 1$
14. $y = 2x^3 - 12$
15. $y = 1.5x^3 + x^2 - 2x + 1$
16. $y = -3x^3 - 10x^2 + 100$
17. **a.** males: $y = -0.002571x^2 + 0.2829x + 67.21$
    females: $y = -0.002286x^2 + 0.2514x + 74.82$
    b. males: $y = 0.00008333x^3 - 0.007571x^2 + 0.3545x + 67.11$
    females: $y = 0.00008333x^3 - 0.007286x^2 + 0.3231x + 74.72$
    c. The cubic model is a better fit.
18. $y = x^3 - 2x^2$; 4335
19. $y = x^3 - 10x^2$; 2023
20. $y = -0.5x^3 + 10x^2$; 433.5

21. $y = -0.03948x^3 + 2.069x^2 - 17.93x + 106.9$; 206.07

22. $y = -0.007990x^3 + 0.4297x^2 - 6.009x + 43.57$; 26.34

23. $y = 0.01002x^3 - 0.3841x^2 + 5.002x + 2.132$; 25.39

24. Check students' work.

25. $x^3 + 4x$; cubic binomial

26. $-4a^4 + a^3 + a^2$; quartic trinomial

27. 7; constant monomial

28. $6x^2$; quadratic monomial

29. $x^4 + 2x^3$; quartic binomial

30. $\frac{1}{2}x^5 + \frac{2}{3}x$; quintic binomial

31. a. $V = 10\pi r^2$

    b. $V = \frac{2}{3}\pi r^3$

    c. $V = \frac{2}{3}\pi r^3 + 10\pi r^2$

32. Answers may vary. Sample: Cubic functions represent curvature in the data. Because of their turning points they can be unreliable for extrapolation.

33. $-c^2 + 16$; binomial

34. $-9d^3 - 13$; binomial

35. $16x^2 - x - 5$; trinomial

36. $2x^3 - 6x + 17$; trinomial

37. $a + 4b$; binomial

38. $-12y$; monomial

39. $8x^2 - 6y$; binomial

40. $-3a + 2$; binomial

41. $2x^3 + 9x^2 + 5x + 27$; polynomial of 4 terms

42. $-4x^4 - 3x^3 + 5x - 54$; polynomial of 4 terms

43. $80x^3 - 109x^2 + 7x - 75$; polynomial of 4 terms

44. $2x^3 - 2x^2 + 8x - 27$; polynomial of 4 terms

45. ~~$6a^2 + 3ab - 8$~~; trinomial $10a^2 - 3ab + 10$

14

46. $8x^3 + 2x^2$; binomial

47. $30x^3 - 10x^2$; binomial

48. $2a^3 - 5a^2 - 2a + 5$; polynomial of 4 terms

49. $b^3 - 6b^2 + 9b$; trinomial

50. $x^3 - 6x^2 + 12x - 8$; polynomial of 4 terms

51. $x^4 + 2x^2 + 1$; trinomial

52. $8x^3 + 60x^2 + 150x + 126$; polynomial of 4 terms

53. $a^3 - a^2b - b^2a + b^3$; polynomial of 4 terms

54. $a^4 - 4a^3 + 6a^2 - 4a + 1$; polynomial of 5 terms

55. $12s^3 + 61s^2 + 68s - 21$; polynomial of 4 terms

56. $x^3 + 2x^2 - x - 2$; ~~trinomial~~ poly of 4

57. $8c^3 - 26c + 12$; trinomial

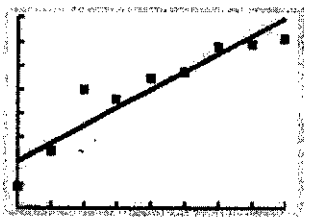
58. $s^4 - 2t^2s^2 + t^4$; trinomial

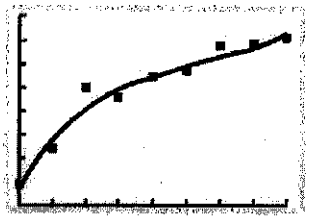
59. a. $y = 0.7166x + 47.61$

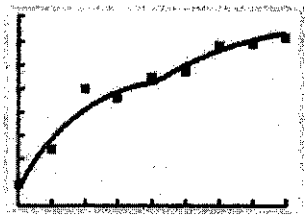
$y = 0.0009365x^3 - 0.0744x^2 + 2.2929x + 41.4129$

$y = -0.00004789x^4 + 0.004666x^3 - 0.1647x^2 + 2.9797x + 40.7831$

b.







The quartic model fits best.

c. $\approx 72.2 \times 10^{15}$

60. $2.5 \times 10^8 \text{ cm}^3$

61. a. up 4 units

b. $y = 4x^3$ is more narrow.

c. $y = x^3$

62. B

63. A

64. A

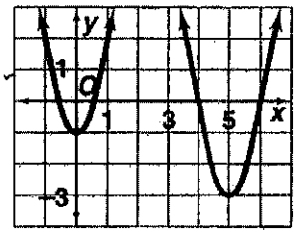
65. **[2]** If it is in standard form, the degree is the exponent on the first variable.

[1] incorrect reason for why it is easier to find in standard form

66. 2

67. 2

68. none

69. 

(5, −3)

70. $\begin{bmatrix} 1 & -3 & 1 & 5 \\ -8 & -3 & 0 & -3 \end{bmatrix}$

71. $\begin{bmatrix} 2 & -3 & -6 \\ 5 & -2 & 0 \end{bmatrix}$

72. $\begin{bmatrix} -2 & -1 & -2 & -1 \\ -3 & -3 & -4 & -4 \end{bmatrix}$