

ANSWER KEYS FOR EXTRA PRACTICE SHEETS

Extra Practice 1

1. -32 2. -6.2 3. $-\frac{1}{4}$ 4. -24.6 5. $-\frac{23}{20}$ 6. -32 7. $-\frac{4}{15}$ 8. -34 9. 13.22
10. -12 11. 0 12. 18 13. -1.2 14. $-\frac{1}{5}$ 15. 0 16. $-\frac{1}{6}$ 17. -86 18. 2.09 19. 71
20. $\frac{3}{5}$ 21. 0 22. -20.4 23. -57 24. $-\frac{7}{8}$ 25. $\frac{1}{18}$ 26. 9.7 27. $\frac{23}{35}$ 28. 0 29. $-\frac{1}{4}$
30. 84 31. $-\frac{39}{40}$ 32. -26 33. -20.87 34. -5.115 35. -1 36. $-\frac{2}{45}$ 37. 7
38. 0.17 39. -29 40. $\frac{1}{12}$ 41. -72 42. 0.097 43. -3 44. 19 45. -19 46. 3 47.
0 48. 38 49. -38 50. 0 51. 18 52. -107 53. 58 54. -40 55. $-\frac{13}{10}$ 56. 5.2 57.
89 58. -13.7 59. 0 60. -50 61. 44 62. -21.1 63. $\frac{23}{24}$ 64. -55
65. $9\frac{1}{3}$, or $\frac{28}{3}$ 66. 4.6 67. -24.03 68. -33 69. $-\frac{2}{3}$ 70. $-\frac{4}{15}$ 71. -22.5
72. -24 73. -134 74. $-\frac{1}{5}$ 75. 4.82 76. -7.67 77. 31 78. $-\frac{1}{42}$ 79. 85
80. $-\frac{25}{12}$ 81. -53 82. $\frac{33}{38}$ 83. -2.4 84. $\frac{5}{4}$

Extra Practice 2

1. 6 2. 15° 3. 11 in. 4. 5, 7 5. -2 6. -10 7. 2 8. 18, 19, 20, 21 9. 8 10. 36in., 12
in. 11. 16 ft by 26 ft 12. \$595 13. 7 14. $35^\circ, 45^\circ, 100^\circ$ 15. 18, 20, 22 16. 3.5 hr

Extra Practice 3

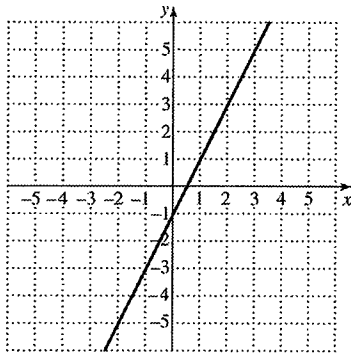
1. 3^6 2. 4^7 3. 9^5 4. f^9 5. r^8 6. $-e^8$ 7. $-8r^3z^5$ 8. $10x^3y$ 9. $12n^5$ 10. $18x^6$
11. $-12a^9b^3$ 12. $-40x^4y^9$ 13. $12n^2xy^3$ 14. $-5x^5y^5$ 15. b^2 16. $\frac{4x}{3}$ 17. $5x^2$
18. $\frac{13n^3}{7}$ 19. $\frac{3n}{2}$ 20. $2y$ 21. $-\frac{5a^6}{6}$ 22. $-3n^4$ 23. $\frac{11x^2}{9}$ 24. $-7x^2z$ 25. $6a^2b^5c^5$
26. $\frac{16}{5}a^2b^2c^5$ 27. 1 28. -1024 29. -125 30. $\frac{1}{216}$ 31. $\frac{1}{16}$ 32. -512 33. $-\frac{1}{216}$
34. 6561 35. 729 36. $\frac{1}{1024}$ 37. $\frac{1}{2187}$ 38. 1 39. $\frac{1}{a^3}$ 40. $\frac{1}{5x^4y^2}$ 41. $\frac{1}{x^4y^2}$
42. $\frac{1}{64x^3y^4}$ 43. $\frac{1}{16c^{10}x^4}$ 44. $\frac{1}{2x^2y}$ 45. $\frac{1}{d^4f^{12}}$ 46. $\frac{y^2z}{x^2}$ 47. $\frac{3f^3}{n^7}$ 48. $\frac{1}{m^{12}y^{18}}$

Extra Practice 3 (continued)

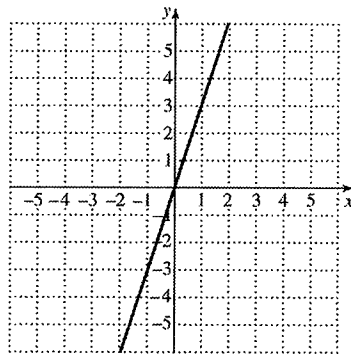
49. $\frac{5m^4c^2y^2}{x^3}$ 50. 2^{-4} 51. $3 \cdot 2^{-2}$ 52. $(-3)^{-3}$ 53. $\frac{5}{x^2}$ 54. $\frac{1}{n^{-5}}$ 55. y^{-2} 56. $-3(2y)^{-3}$
 57. $(-2x)^{-2}$ 58. $\frac{1}{5}$ 59. 6^6 60. $\frac{1}{x}$ 61. $12x^4y^3$ 62. $8b^4c$ 63. $5xy^5z$ 64. $\frac{3y^2}{2x}$
 65. $\frac{4bc^3}{3a^2m^3}$ 66. $\frac{3}{64x^2y^2}$ 67. $\frac{z^3}{2x^2y}$ 68. $4a^8b^{12}$ 69. $\frac{1}{36x^6y^4}$ 70. $8x^9y^6$ 71. 4^9
 72. $\frac{-z}{4x^2y^2}$ 73. $\frac{d^5}{-2a^6b^3}$ 74. $\frac{64y^{21}}{27x^3}$ 75. $\frac{4x^4z^4}{y^2}$ 76. $\frac{64}{27a^3b^3c^9}$ 77. 4^6x^{12} 78. 4^x
 79. $\frac{1}{5^6x^{18}y^{12}}$ 80. $1000a^6c^3x^3$

Extra Practice 4

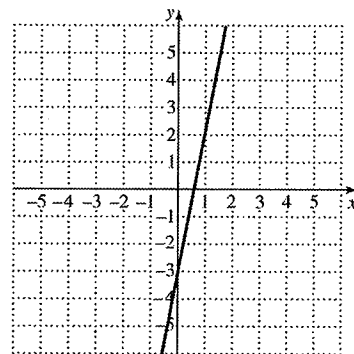
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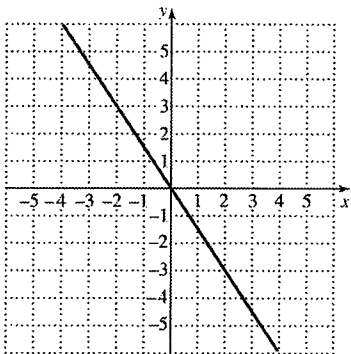
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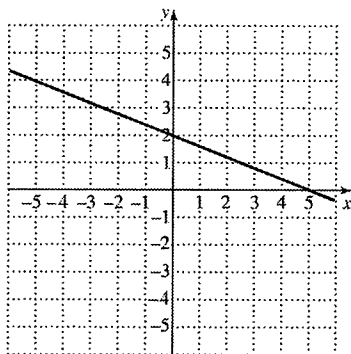
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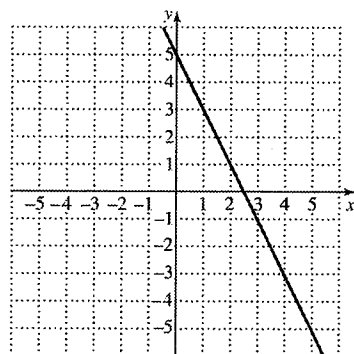
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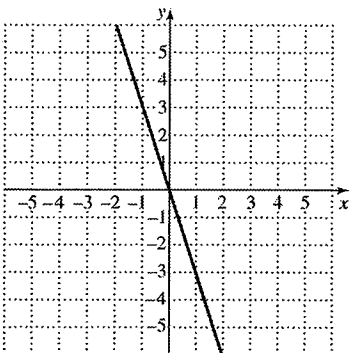
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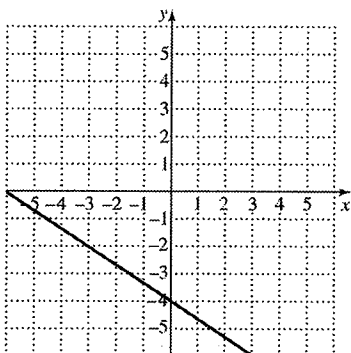
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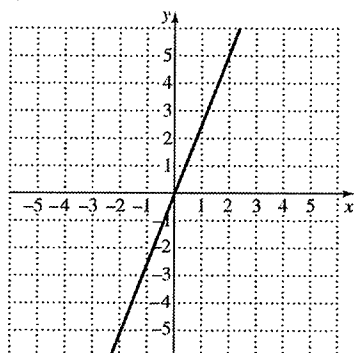
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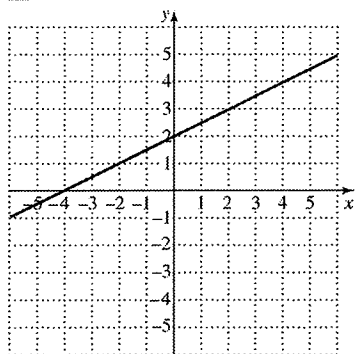


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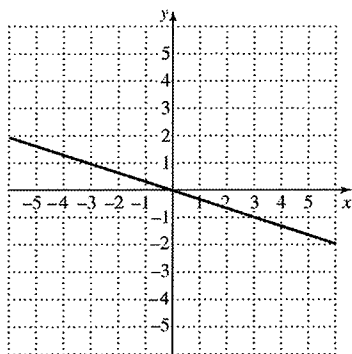


Extra Practice 4 (continued)

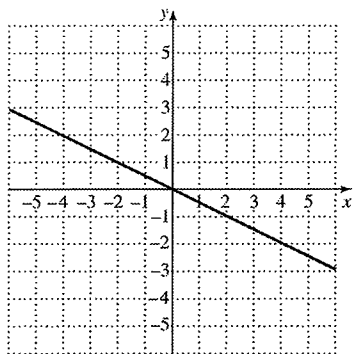
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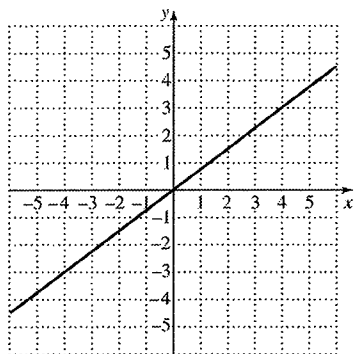
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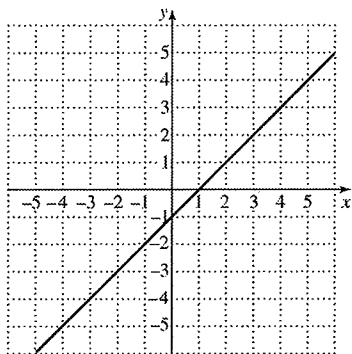
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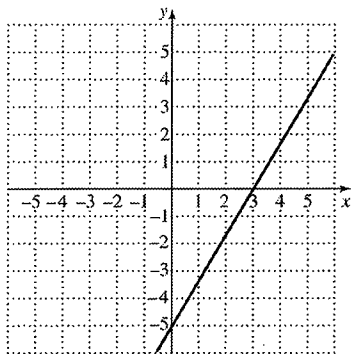
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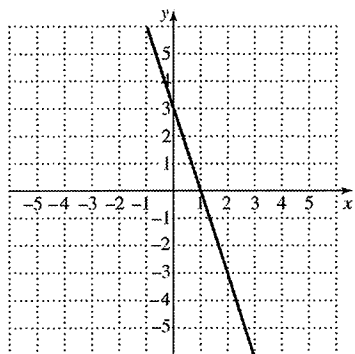
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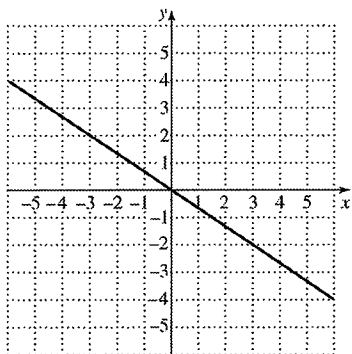
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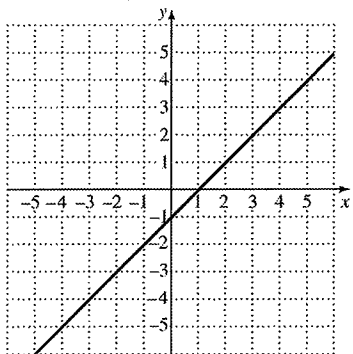
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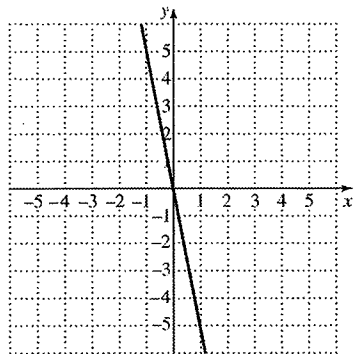
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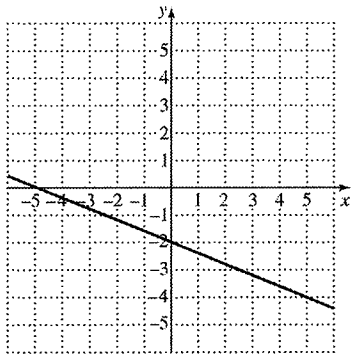
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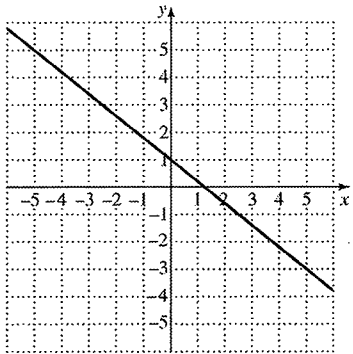
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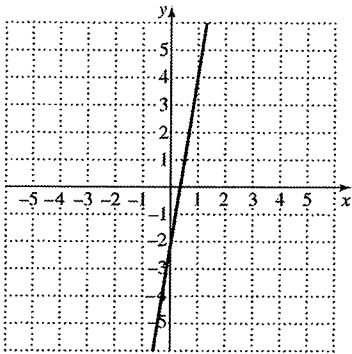


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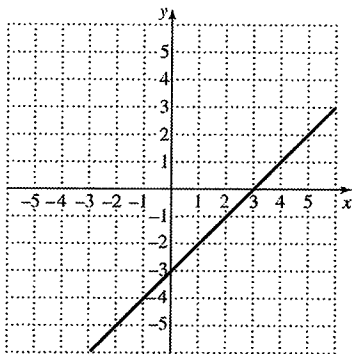


Extra Practice 4 (continued)

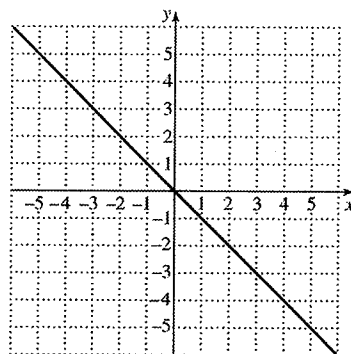
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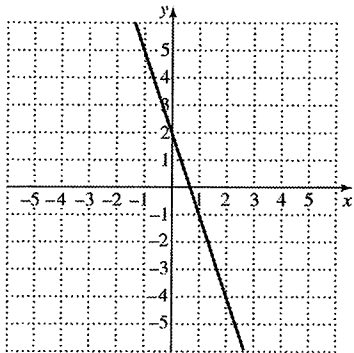
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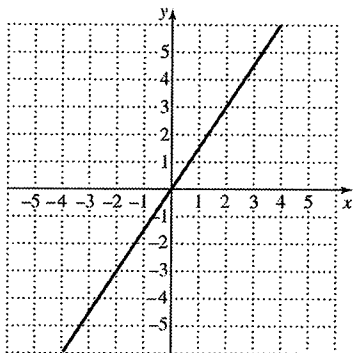
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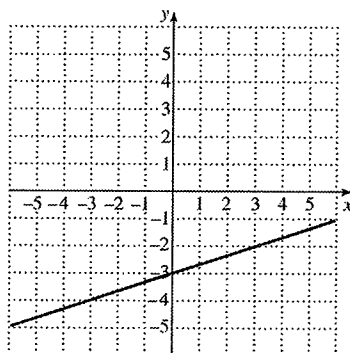
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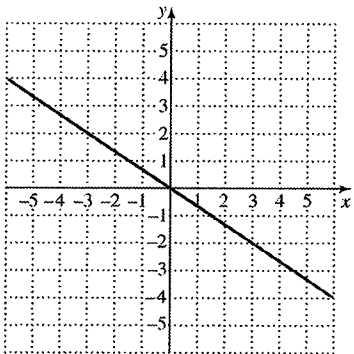
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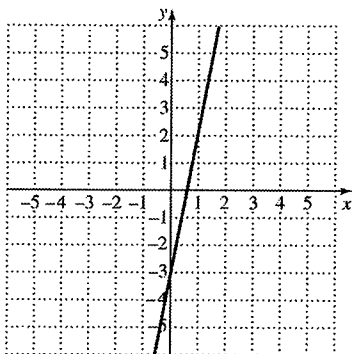
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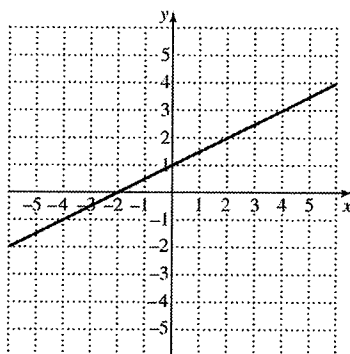
28.



29.



30.



Extra Practice 5

1. $(-2, 3)$ 2. $(5, 4)$ 3. $(1, 3)$ 4. $(5, -1)$ 5. $(-3, 4)$ 6. $(2, 2)$ 7. $(-1, -3)$ 8. $(4, -5)$
9. $(3, 3)$ 10. $(6, -2)$ 11. $(-1, -1)$ 12. $(2, -6)$ 13. $(8, 1)$ 14. $(-4, -4)$ 15. $(2, 1)$
16. $(-5, 3)$ 17. $(\frac{11}{3}, -\frac{5}{6})$ 18. $(2, 4)$ 19. $(\frac{1}{4}, \frac{1}{3})$ 20. $(18, 24)$

Extra Practice 6

1. 7, -18 2. \$8500 3. 18 nickels, 24 dimes 4. 7 5. 21, 35 6. Length is 29 ft; width is 13 ft
7. 321 adult's tickets; 227 child's tickets 8. 540 mi 9. 39, -18 10. Length is 39 ft;

Extra Practice 6 (continued)

width is 16 ft 11. 40 gallons of 20%, 80 gallons of 65% 12. \$8500 at 11%; \$14,500 at 8%
13. 25°, 65° 14. 20 mph

Extra Practice 7

1. (1,3,-2) 2. (1,1,6) 3. (3,1,9) 4. (9,3,9) 5. (8,9,1) 6. (7,8,3) 7. (14,7,-1)
8. (6,7,1) 9. (-3,-4,2) 10. (2,5,7) 11. (1,9,1) 12. No solution 13. Dependent
14. (9,9,0) 15. Dependent 16. No solution 17. (1,4,10) 18. (-3,2,8) 19. (8,4,10)
20. (6,3,-1) 21. (3,4,5) 22. (8,11,-5) 23. (4,7,-3) 24. (20°,120°,40°) 25. (35°,68°,77°)
26. (38°,91°,51°) 27. Albert: 150; Beth: 213; Cathy: 97 28. Apple: 8; blueberry: 7;
chocolate: 15

Extra Practice 8

1. $\{x|x \leq 4\}$ 2. $\{y|y \leq \frac{9}{5}\}$ 3. $\{y|y < -\frac{4}{3}\}$ 4. $\{x|x < 14\}$ 5. $\{x|x \leq 5\}$ 6. $\{y|y > 2\}$
7. $\{x|x < \frac{11}{7}\}$ 8. $\{y|y \geq -1\}$ 9. $\{y|y < 16\}$ 10. $\{y|y < 0\}$ 11. $\{x|x \leq 8\}$ 12. $\{y|y \leq 7\}$
13. $\{x|x < 9\}$ 14. $\{y|y \leq -14\}$ 15. $\{y|y < 22\}$ 16. $\{x|x < \frac{1}{4}\}$ 17. $\{x|x \leq -\frac{1}{8}\}$
18. $\{x|x \geq 12.5\}$ 19. $\{y|x > \frac{10}{3}\}$ 20. $\{x|x \geq \frac{2}{3}\}$ 21. $\{y|x \geq 15\}$ 22. $\{x|x < -4\}$
23. $\{x|x \geq 2\}$ 24. $\{x|x < -1\}$ 25. $\{x|x > \frac{25}{9}\}$ 26. $\{y|y \geq 1\}$ 27. $\{x|x < 3\}$ 28. $\{y|y \geq 7\}$
29. $\{y|y > -20\}$ 30. $\{x|x \geq 60\}$

Extra Practice 9

1. $\{x|x < -\frac{9}{4} \text{ or } x > 3\}$ 2. $\{y|-5 \leq y \leq 9\}$ 3. $\{x|-\frac{31}{5} < x < 3\}$ 4. {2,7} 5. {-4,4}
6. $\{y|y \leq 0 \text{ or } y \geq 12\}$ 7. $\{y|-11 \leq y \leq -7\}$ 8. $\{y|y < -\frac{5}{3} \text{ or } y > 1\}$
9. $\{x|x < -\frac{5}{2} \text{ or } x > 4\}$ 10. $\{x|-16 < x < 16\}$ 11. {-0.34,0.6} 12. $\{x|x \leq -\frac{3}{2} \text{ or } x \geq 6\}$
13. $\{x|x < -26 \text{ or } x > 8\}$ 14. $\{-1, -\frac{1}{2}\}$ 15. $\{y|y < -2 \text{ or } y > 20\}$ 16. $\{y|-\frac{1}{5} \leq y \leq \frac{1}{5}\}$ 17.
 $\{y|y < -1 \text{ or } y > 1\}$ 18. {1,5} 19. $\{x|x \leq -\frac{13}{5} \text{ or } x \geq \frac{17}{5}\}$ 20. $\{x|-\frac{3}{2} < x < 10\}$
21. {-48,54} 22. $\{x|x < 0 \text{ or } x > 38\}$ 23. $\{x|-\frac{1}{4} \leq x \leq 1\}$ 24. $\{y|-3 < y < 12\}$

Extra Practice 9 (continued)

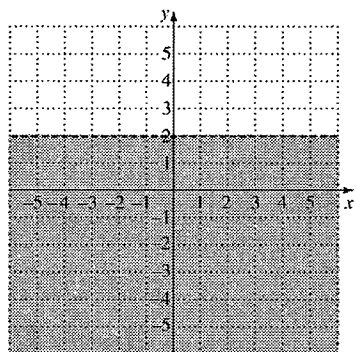
25. $\{y|y < -9 \text{ or } y > 9\}$ 26. $\{y|\frac{1}{27} \leq y \leq \frac{1}{3}\}$ 27. $\{y|-9 < y < \frac{43}{9}\}$ 28. $\{x|x \leq -7 \text{ or } x \geq 2\}$

29. $\{x|x \leq -\frac{2}{9} \text{ or } x \geq \frac{2}{3}\}$ 30. $\{y|5 \leq y \leq 12\}$

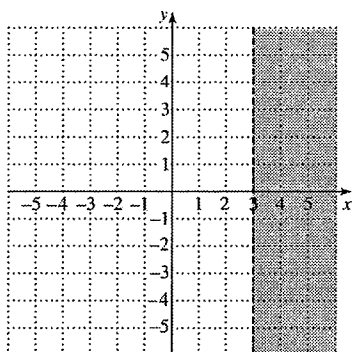
Extra Practice 10

1. Yes 2. No 3. Yes 4. Yes 5. No 6. Yes

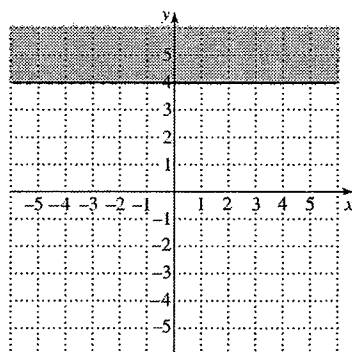
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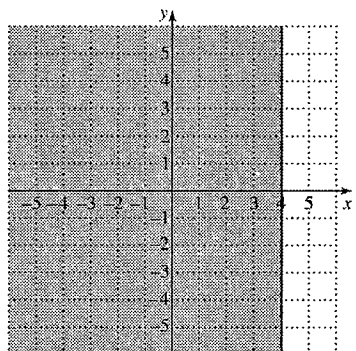
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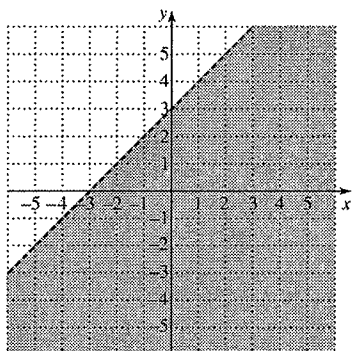
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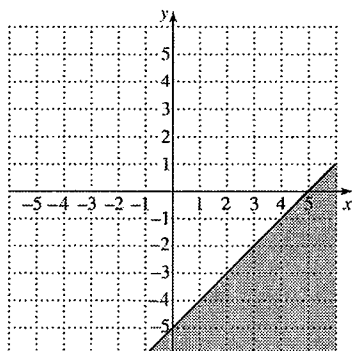
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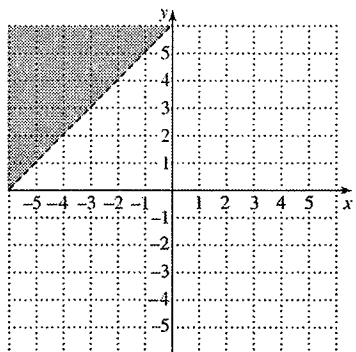
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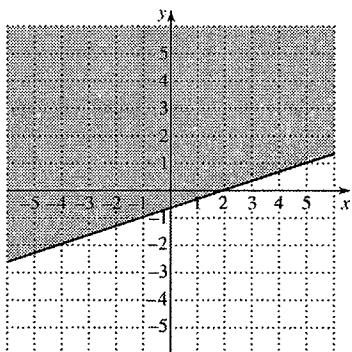
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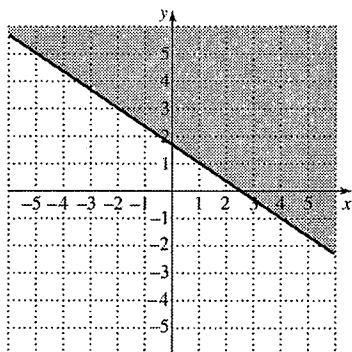
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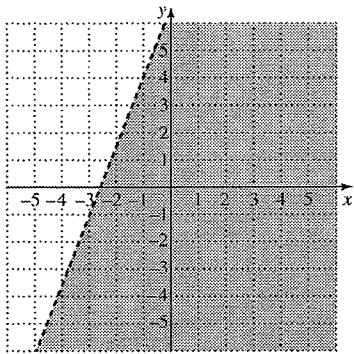


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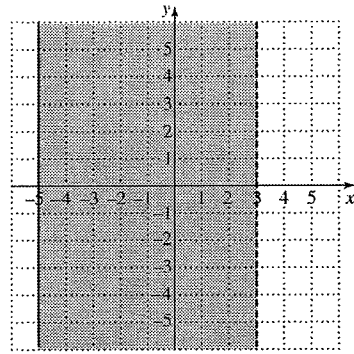


Extra Practice 10 (continued)

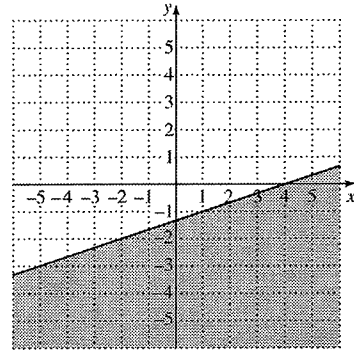
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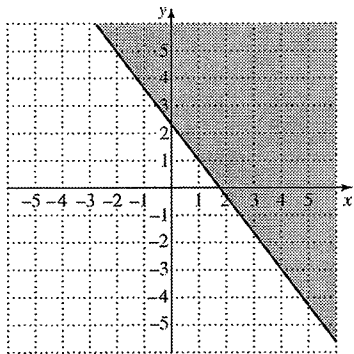
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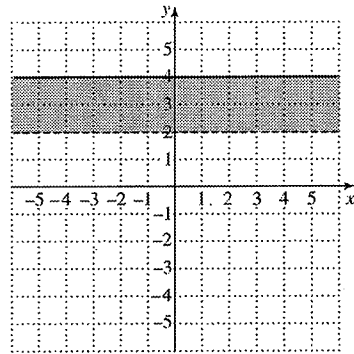
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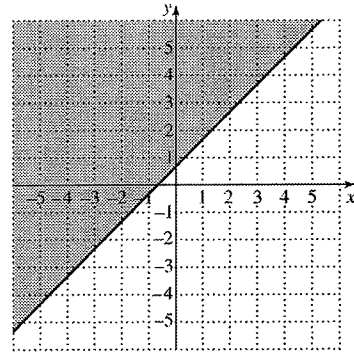
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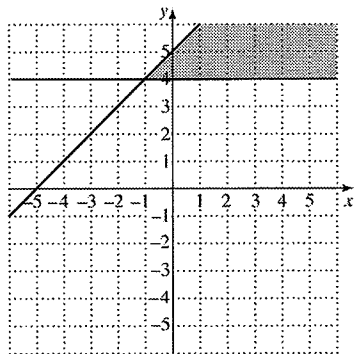
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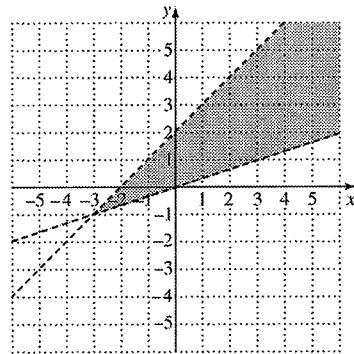
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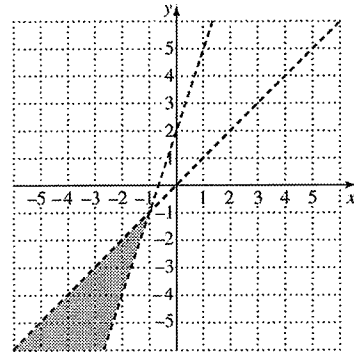
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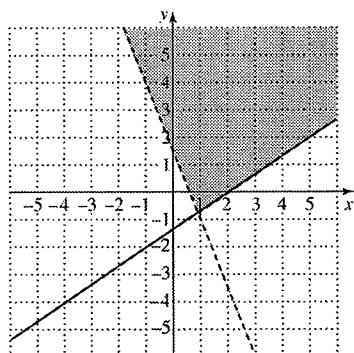
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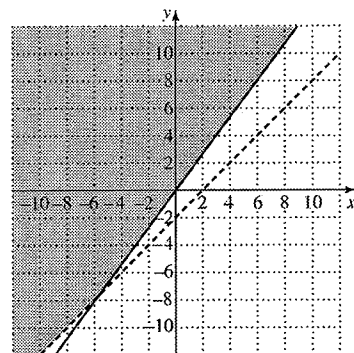
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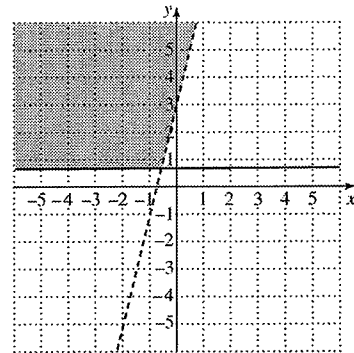
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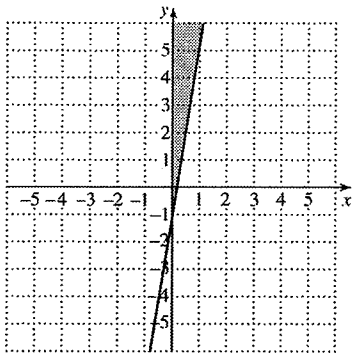


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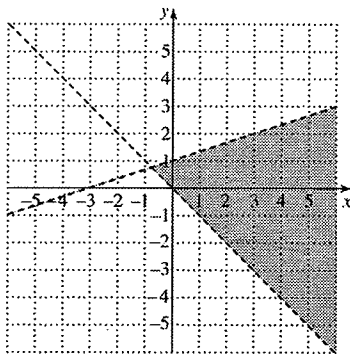


Extra Practice 10 (continued)

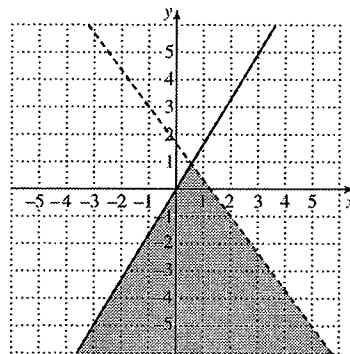
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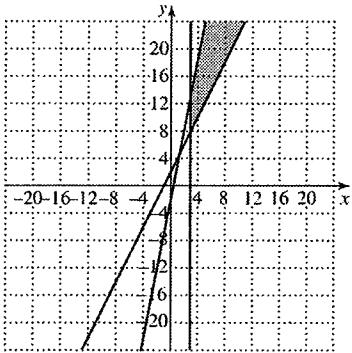
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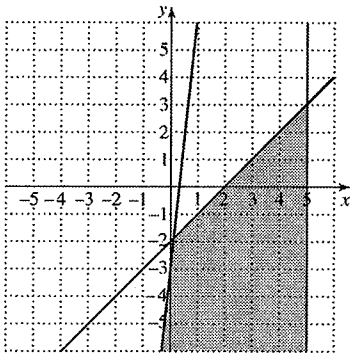
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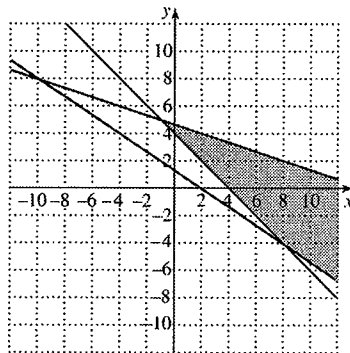
31.



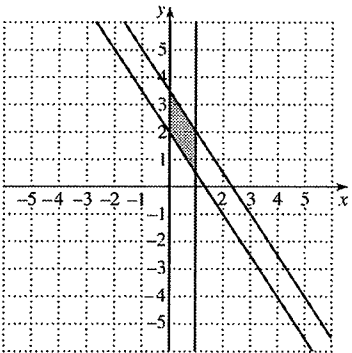
32.



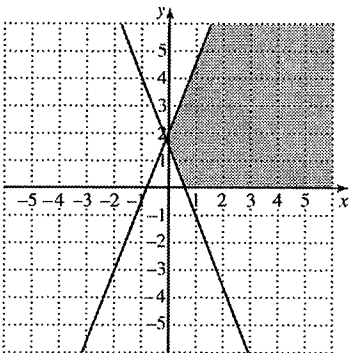
33.



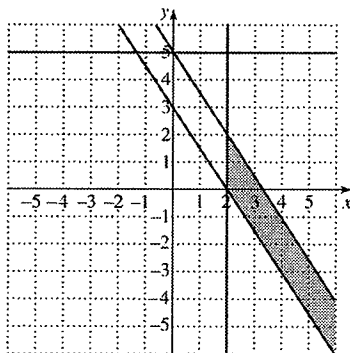
34.



35.



36.



Extra Practice 11

1. $(5x-1)(25x^2+5x+1)$ 2. $(w+8)(w-8)$ 3. $(y-6)^2$ 4. $(x-12)(x+4)$
 5. $a(a-4)(a-3)$ 6. Not factorable 7. $(x-3)(2x+3)$ 8. $6(x+1)^2$ 9. $(y-9)(y-2)$
 10. $(8-b)(5+b)$ 11. $3x^2(x^3-4)$ 12. $2(5x+1)(25x^2-5x+1)$
 13. $7x(y^2+z^2)(y+z)(y-z)$ 14. $y^2(2y-3)(y+4)$ 15. $(8x-5)(3x+1)$
 16. $(y-2)(y+16)$ 17. $(0.2w+0.7)^2$ 18. $4x(x+2)(x+8)$ 19. $(4y+3)(16y^2-12y+9)$
 20. $\left(\frac{1}{9}+x\right)\left(\frac{1}{9}-x\right)$ 21. Not factorable 22. $(x-7)(x^2+7x+49)$ 23. $4(2y+3)(5y-4)$

Extra Practice 11 (continued)

24. $b(3a - 5c + d)$ 25. $(2c^2 - 5d^2)(4c^4 + 10c^2d^2 + 25d^4)$ 26. $(9 - z)^2$ 27. $x^2(x + 5)^2$
28. $(x - y)(z - w)$ 29. $(y - 4)(y + 9)$ 30. $(x - 14)(x + 3)$ 31. $7(a + b)(a - b)$
32. $(6 - a)(36 + 6a + a^2)$ 33. $(9 + y)^2$ 34. $(b - 7)(b + 2)$ 35. $q^2(q - 3)(q - 7)$
36. $y^2(3x + 5y)(3x - 5y)$ 37. $(7 + x)(15 - x)$ 38. Not factorable 39. $6(y + 2)(y^2 - 2y + 4)$
40. $a(a - 7)^2$ 41. $(y - 12)(3y + 2)$ 42. $(a + 4)^2$ 43. $(y + 11)(y - 11)$ 44. $(7 - a)(6 + a)$
45. $x(3x - 4)^2$ 46. $\left(x - \frac{1}{2}\right)\left(x^2 + \frac{1}{2}x + \frac{1}{4}\right)$ 47. $(5w - 3)(2w + 7)$ 48. $(2x + 7)(8x - 1)$
49. $(9x + 2)(3x - 4)$ 50. $(x + 1)(x - 1)(x^2 - x + 1)(x^2 + x + 1)$ 51. $(x - 0.3)^2$
52. $(x - 5)(4x + 7)$ 53. Not factorable 54. $x(7x - 1)^2$ 55. $(8y + 3)(5y - 1)$
56. $15(w + 2)(w - 3)$ 57. $(0.2a + 0.7b)(0.2a - 0.7b)$ 58. $xy^2(x - 2)(x + 9)$
59. $2(x^2 - 3y^2)(x^4 + 3x^2y^2 + 9y^4)$ 60. $\left(\frac{1}{2}x - 5\right)^2$

Extra Practice 12

1. $\{-1, 1\}$ 2. $\{-3, 4\}$ 3. $\{-3, 8\}$ 4. $\{-5, 2\}$ 5. $\{-9, -3\}$ 6. $\{1\}$ 7. $\{-4, 2\}$
8. $\{-6, -3\}$ 9. $\{2, 7\}$ 10. $\{-5, -2\}$ 11. $\{-1, 10\}$ 12. $\{-2, 0\}$ 13. $\{3, 10\}$ 14. $\{-7, -4\}$
15. $\left\{-\frac{5}{6}, 8\right\}$ 16. $\left\{-8, \frac{7}{3}\right\}$ 17. $\{-1, 8\}$ 18. $\{-3, -2\}$ 19. $\left\{-\frac{9}{2}, -2\right\}$ 20. $\{5, 6\}$
21. $\left\{-4, -\frac{3}{4}\right\}$ 22. $\left\{-\frac{8}{3}, 4\right\}$ 23. $\{-3, 8\}$ 24. $\{9\}$ 25. $\{-4, 3\}$ 26. $\{-2, 5\}$ 27. $\{3\}$
28. $\{-9, 3\}$ 29. $\{-4, 0\}$ 30. $\{-2, 7\}$ 31. $\{x | x \in R \text{ and } x \neq -2 \text{ and } x \neq 3\}$
32. $\{x | x \in R \text{ and } x \neq -3 \text{ and } x \neq 4\}$ 33. $\{x | x \in R \text{ and } x \neq -8 \text{ and } x \neq -3\}$
34. $\{x | x \in R \text{ and } x \neq -5 \text{ and } x \neq 4\}$ 35. $\{x | x \in R \text{ and } x \neq -8 \text{ and } x \neq 3\}$
36. $\{x | x \in R \text{ and } x \neq -6 \text{ and } x \neq 2\}$ 37. 14 38. -9 or 8 39. 12 and 13 40. 14 and 16 41.
9 in. by 11 in. 42. 2ft, 3 ft 43. 36 ft² 44. 5 ft x 12 ft 45. 9, 11, 13 46. (22, 23, 24) 47.
196 in.² 48. 25 ft by 35 ft

Extra Practice 13

1. $8x$ 2. $2x$ 3. $2x^2 + 8$ 4. $\frac{2x + 1}{3x^2}$ 5. $\frac{13 + 12x}{3}$ 6. $\frac{x}{3x^2 + 5}$ 7. $\frac{x + 3}{x - 4}$ 8. $\frac{x + 3}{x - 5}$
9. $\frac{x + 3}{x + 9}$ 10. $\frac{x + 2}{x - 5}$ 11. $\frac{x + 7}{x + 3}$ 12. $\frac{4x + 3}{2x + 3}$ 13. $\frac{6y^2}{5x}$ 14. $6ab^2$ 15. $\frac{x - 1}{2}$ 16. x
17. $x^2(3x + 4)$ 18. $\frac{(2x + 5)(6x + 5)}{(2x + 3)(3x + 5)}$ 19. $\frac{(x - 9)(3x + 2)}{(3x + 4)(2x - 9)}$ 20. $(x - 1)(x + 2)$
21. $\frac{(x - 2)(x - 1)}{(2x - 1)(x + 2)}$ 22. $\frac{2x + 5}{(x + 6)(3x + 5)}$ 23. $\frac{2x + 3}{x - 4}$ 24. $\frac{x + 2}{(x - 2)(x - 1)}$ 25. $\frac{x - 5}{2x + 5}$

Extra Practice 13 (continued)

26. $\frac{x(x+10)}{(x+5)(x-5)}$ 27. $\frac{(x-1)(x-5)}{(x-3)(x-3)}$

Extra Practice 14

1. $\frac{4x+6}{(x-2)(x+2)}$ 2. $\frac{x}{5y}$ 3. $\frac{2x-3}{x-y}$ 4. $\frac{2ab-b^2}{3(a+b)}$ 5. $\frac{-x+3}{(x-1)(2x+5)(3x+2)}$ 6. $5a-5b$

7. $\frac{xy+y^2+5x-15}{(x-3)y}$ 8. $\frac{y^2+5x+5y}{y(x+y)}$ 9. $\frac{ab-3b+a}{ab}$ 10. $\frac{2x}{4x-3}$ 11. $\frac{-4}{(x+8)(2x+1)}$

12. $\frac{11x^2+x-1}{(x-2)(x+2)(5x-1)}$ 13. $\frac{x^2-x-14}{(x-3)(x+3)}$ 14. $\frac{6x^2+11x}{(x+4)(x+1)(3x-1)}$ 15. 0

16. $\frac{50}{(a-5)(a+5)}$ 17. $\frac{x-5}{5x}$ 18. $\frac{2}{b+7}$ 19. $\frac{x^3-17x-3}{(x-4)(x+4)}$ 20. $\frac{x-10}{(x-4)(x-3)(x+3)}$

Extra Practice 15

1. $\frac{1}{x-1}$ 2. $x+y$ 3. $\frac{2b-a}{5a-3b}$ 4. $\frac{4xy}{x+y}$ 5. $\frac{1-x}{1-2x}$ 6. $\frac{a^2b-3a^2}{b^2-ab^2}$ 7. $-xy(x+y)$

8. $\frac{-7x^2}{4x^2+4}$ 9. $\frac{9}{a-c}$ 10. $\frac{x}{x-1}$ 11. $ab(a+b)$ 12. $\frac{x}{x-y}$ 13. $\frac{x^2+5x-6}{3x^2+4x-4}$

14. $\frac{1-3y^2}{1+9y^2}$ 15. $\frac{8x-2}{8x-1}$ 16. $\frac{x-5}{x^2-2x+4}$

Extra Practice 16

1. $-2\frac{1}{5}$ 2. $\frac{62}{5}$ 3. $\frac{4}{3}$ 4. $-4, -\frac{2}{3}$ 5. $\frac{13}{4}$ 6. 4 7. No solution 8. -30 9. 5

10. 16 11. -4, -1 12. $8\frac{4}{7}$ min 13. 125 mph 14. $1\frac{3}{7}$ hr 15. 480 mi 16. $1\frac{31}{32}$ hr

17. 250 mph 18. 3 hr 19. 4 mph 20. 32 min

Extra Practice 17

1. $5x^3+4x^2-7x$ 2. $5x+1+\frac{-10}{3x-5}$ 3. $x+9$ 4. $7x^2+2x-5+\frac{12}{x+1}$

5. $2y^2-4y+2+\frac{-8}{5y+2}$ 6. $6+2x^3-3x$ 7. y^3-2y^2+4y-8

8. $a^3+3a^2+11a+33+\frac{84}{a-3}$ 9. $x^4-3x^3+9x^2-18x+36+\frac{-74}{x+2}$ 10. $x^2-6x+36$

11. $7x^3+8x^5-5x^2$ 12. $x^6-x^4+x^2-1$ 13. $3b+2$ 14. $5x+7$ 15. $4a+1$

16. $5x+7+\frac{16}{x-2}$ 17. $4y^2-y+2+\frac{-11}{8y+1}$ 18. $4x^2+3x$ 19. $b^2-4b+9+\frac{-27}{b+2}$

Extra Practice 17 (continued)

20. $2x^2 + 5x - 3$ 21. $8x^2 - 24x + 83 + \frac{-257}{x+3}$ 22. $x^6 + x^4 + 6x^2 + 12$

23. $x^5 - x^4 + x^3 + 2x^2 - 7x + 7 + \frac{-7}{x+1}$ 24. $x^6 + 3 + \frac{16}{x^6 - 4}$

Extra Practice 18

1. $x^2 + 6x + 16 + \frac{53}{x-3}$ 2. $x^2 + x + 6 + \frac{9}{x-2}$ 3. $x^2 - 5x - 24$ 4. $2x^2 - 13x + 20$

5. $2x^2 - 7x + 3 + \frac{3}{x+8}$ 6. $x^2 + x - 6 + \frac{5}{x-4}$ 7. $3x^2 - 13x + 80 + \frac{-483}{x+6}$

8. $2x^2 + 6x + 14 + \frac{45}{x-3}$ 9. $x^3 + 2x^2 + 4x + 8$ 10. $x^2 - 6x + 24 + \frac{-93}{x+4}$

11. $x^2 + 6x + 15 + \frac{34}{x-2}$ 12. $x^2 + 2x + \frac{-4}{x+1}$ 13. $2x^2 + 5x + 44 + \frac{306}{x-7}$ 14. $x^2 - 3 + \frac{19}{x+6}$

15. $x^2 + 7x + 7 + \frac{10}{x-2}$ 16. $x^2 + 2x + 18 + \frac{134}{x-7}$ 17. $x^2 - 6x + 16 + \frac{-52}{x+3}$

18. $x^2 - 8x + 70 + \frac{-555}{x+8}$ 19. $x^2 + 6x + 30 + \frac{123}{x+3}$ 20. $x^2 - 12x + 63 + \frac{-321}{x+5}$ 21. 1579

22. 319 23. 101 24. 4746 25. 412 26. 494 27. 1721 28. 4666 29. 1899 30. 26,566

Extra Practice 19

1. $\sqrt{11}$, $\sqrt{23}$, $\sqrt{32} = 4\sqrt{2}$, does not exist 2. $\sqrt{14}$, does not exist, $\sqrt{20} = 2\sqrt{5}$, $\sqrt{8} = 2\sqrt{2}$

3. 4, 0, $\sqrt{20} = 2\sqrt{5}$, does not exist 4. $\sqrt[3]{16} = 2\sqrt[3]{2}$, $\sqrt[3]{-24} = -2\sqrt[3]{3}$, $\sqrt[3]{21}$, $\sqrt[3]{48} = 2\sqrt[3]{6}$

5. $\sqrt[3]{-10}$, $\sqrt[3]{14}$, $\sqrt[3]{20}$, $\sqrt[3]{-40} = -2\sqrt[3]{5}$ 6. $\sqrt[4]{3}$, does not exist, $\sqrt[4]{5}$, $\sqrt[4]{7}$ 7. 5 8. $4|x|$

9. $9|x|\sqrt{x}$ 10. $7x$ 11. $4t$ 12. -3 13. $-z$ 14. $|2x+3|$ 15. $|2x+3|$ 16. $-6x$

17. $\frac{6}{7}$ 18. $-\frac{5}{9}$ 19. $\frac{2}{3}$ 20. $4ab$ 21. $\{x|x \geq 3\}$, or $[3, \infty)$ 22. $\{x|x \in \text{Reals}\}$, or $(-\infty, \infty)$

23. $\{x|x \geq 9\}$, or $[9, \infty)$ 24. $\{x|x \in \text{Reals}\}$, or $(-\infty, \infty)$ 25. $\{x|x \geq 5\}$, or $[5, \infty)$

26. $\{x|x \in \text{Reals}\}$, or $(-\infty, \infty)$ 27. $\sqrt[6]{y}$ 28. $\sqrt{4}$, or 2 29. $\sqrt[5]{32}$, or 2 30. $\sqrt{16^3}$, or 64

31. $\sqrt[6]{xy}$ 32. $\sqrt{169x^3}$, or $13x\sqrt{x}$ 33. $\sqrt[4]{64^5}$, or $128\sqrt[4]{4}$ 34. $\sqrt[3]{16xy^2z}$ or $2\sqrt[3]{2xy^2z}$

35. $\sqrt[4]{625^3}$, or 125 36. $16^{1/3}$ 37. $x^{2/5}$ 38. $(x^2y)^{1/3}$ 39. $(4xy)^{3/2}$ 40. $(10ab^3)^{1/4}$

41. $(abc^2)^{3/5}$ 42. $(x^2y^3z)^{1/4}$ 43. $(3x^2y^3)^{1/2}$ 44. $(x^3y^2z^5)^{1/5}$ 45. $\frac{1}{\sqrt[4]{y^3}}$ 46. $\frac{1}{\sqrt{(10x^2y)^3}}$

47. $\sqrt{64}$, or 8 48. $\left(\frac{6bc}{5a}\right)^{2/3}$ 49. $\frac{1}{\sqrt[10]{x^{11}}}$ 50. $x^{19/10}$ 51. $\sqrt[18]{\frac{y^4}{x^{15}}}$ 52. $x^{5/18}$

53. $\sqrt[4]{a^{3/5}b^{1/2}}$, or $\sqrt[40]{a^6b^5}$ 54. $6^{4/5}$, or $\sqrt[5]{6^4}$ 55. $\frac{1}{\sqrt[10]{4^{11}}}$

Extra Practice 20

1. $2xz\sqrt{5xy}$ 2. $4x^3\sqrt{2xy^2}$ 3. a^4b^3 4. $\frac{7a\sqrt{a}}{b^2}$ 5. $3ac\sqrt{5ab}$ 6. 64 7. $\frac{2x^3\sqrt{2x^2}}{y^2}$
8. $2ab^3\sqrt[4]{4a^3}$ 9. $5ab^2\sqrt{2b}$ 10. $8x^6$ 11. $\frac{4x\sqrt{x}}{9}$ 12. $10xz^5\sqrt{5yz}$ 13. 36
14. $\frac{4a^2\sqrt[3]{a}}{3}$ 15. $2xy\sqrt[3]{30xy^2}$ 16. $xy^2z^3\sqrt{x^3y}$ 17. $\frac{2x\sqrt{6x}}{5}$ 18. 64 19. $8a^3b^6$
20. $9a^2\sqrt[3]{4}$ 21. $5(x+2)\sqrt[3]{x+2}$ 22. $4a^2\sqrt{b}$ 23. $6x$ 24. $4x^2\sqrt[3]{x^2y^2}$ 25. $2x^2y\sqrt{6y}$
26. $3ab^2\sqrt[3]{a}$ 27. $5xy\sqrt[3]{x^2}$ 28. $3(x+3)^2\sqrt{2}$ 29. $36a\sqrt[3]{6b^2}$ 30. $3y^2$ 31. $6xy\sqrt[5]{x^2y^4}$
32. $2(y-3)^2\sqrt[3]{y-3}$

Extra Practice 21

1. 1, 2 2. 36 3. 7 4. 7 5. 0, 1 6. -3, 0 7. 9 8. 30 9. 28 10. 6 11. No solution
12. -4, 0 13. 29 14. 16 15. 6 16. 0 17. No solution 18. 2 19. 8 20. -3

Extra Practice 22

1. $c = 5$ 2. $c = 13$ 3. $b = 8$ 4. $a = \sqrt{180} = 6\sqrt{5}$ 5. $b = 5$ 6. $b = \sqrt{208} = 4\sqrt{13}$
7. $a = \sqrt{7}$ 8. $c = \sqrt{200} = 10\sqrt{2}$ 9. $b = \sqrt{132} = 2\sqrt{33}$ 10. $a = \sqrt{108} = 6\sqrt{3}$ 11. $\sqrt{449}$ ft
12. $\sqrt{369}$ ft 13. $2\sqrt{61} + 4\sqrt{5}$ ft 14. $\sqrt{280} = 2\sqrt{70}$ in. 15. $c = 5$ 16. $b = \sqrt{288} = 12\sqrt{2}$
17. $a = 4$; $b = \sqrt{32} = 4\sqrt{2}$ 18. $b = 12$ 19. 8 20. $a = \frac{5\sqrt{3}}{3}$, $b = \frac{10\sqrt{3}}{3}$
21. $a = 8\sqrt{3}$, $b = 16$ 22. 8 23. $\sqrt{128} = 8\sqrt{2}$ 24. $\sqrt{272} = 4\sqrt{17}$ 25. $8\sqrt{2}$ ft 26. 50 mi
27. $4\sqrt{2}$ m 28. 28 ft

Extra Practice 23

1. $\frac{-2 \pm 6i}{5}$ 2. $2 \pm i\sqrt{2}$ 3. $\frac{-1 \pm \sqrt{6}i}{6}$ 4. $\frac{7 \pm \sqrt{29}}{2}$ 5. $\frac{3 \pm i\sqrt{7}}{2}$ 6. $\frac{1 \pm \sqrt{41}}{10}$ 7. $\frac{7 \pm \sqrt{13}}{6}$
8. $\frac{-3 \pm 3i\sqrt{3}}{2}$ 9. $\frac{1 \pm i\sqrt{31}}{8}$ 10. $\frac{3 \pm i\sqrt{23}}{4}$ 11. $1 \pm \sqrt{3}$ 12. $3 \pm \sqrt{14}$ 13. $\frac{1 \pm i\sqrt{59}}{10}$
14. $3 \pm i\sqrt{3}$ 15. $\frac{3 \pm \sqrt{33}}{2}$ 16. $\frac{-1 \pm \sqrt{11}}{4}$ 17. $\frac{-1 \pm i\sqrt{14}}{3}$ 18. $5 \pm \sqrt{13}$ 19. $3 \pm \sqrt{5}$
20. $-\frac{1}{3}, \frac{1}{2}$ 21. $\frac{2 \pm \sqrt{14}}{10}$ 22. $\frac{1 \pm \sqrt{15}}{7}$ 23. $\frac{5 \pm \sqrt{17}}{3}$ 24. $\frac{-4 \pm \sqrt{46}}{3}$ 25. $\frac{3 \pm \sqrt{41}}{8}$
26. $\frac{-9 \pm \sqrt{61}}{2}$ 27. $4 \pm \sqrt{13}$ 28. $2 \pm \sqrt{5}$ 29. $\frac{1 \pm 2i\sqrt{5}}{7}$ 30. $\frac{1 \pm \sqrt{151}}{15}$

Extra Practice 24

1. 8% 2. 7.8 sec 3. 6% 4. 9.1 sec 5. 5.8% 6. 15 mph 7. 30 hours 8. 30 mph
9. Gary: 10 hr; Marsha: 15 hr 10. 54 mph 11. 3.4 hours 12. 8.5 mph