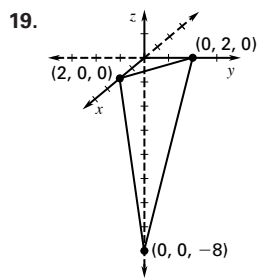
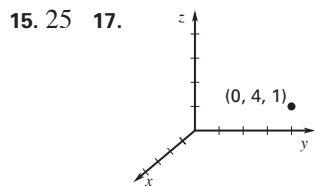
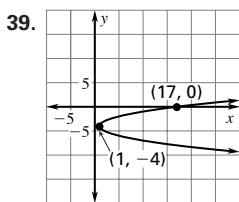
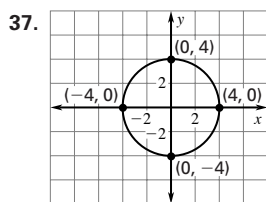


5. $-2, -5$ 7. $4i, -4i$ 9. $\frac{1}{8} \pm \frac{\sqrt{15}}{8}i$ 11. $-1, 2, -2$ 13. 3.25



21. 18 23. 5 25. $xy = -40; y = -20$ 27. $xy = -16; y = -8$ 29. $z = -\frac{2}{3}xy; z = \frac{10}{3}$ 31. $z = 3xy; z = -15$
33. $\sqrt{89} \approx 9.43; (2.5, 4)$ 35. $\sqrt{65} \approx 8.06; (1.5, -1)$



41. $(x-2)^2 + (y+2)^2 = 9$ 43. $\frac{y^2}{4} - \frac{x^2}{5} = 1$ 45. $(-18, 0)$

47. $(\pm \frac{\sqrt{6}}{2}, -\frac{1}{2}), (\pm\sqrt{3}, 1)$ 49. geometric; Each term is

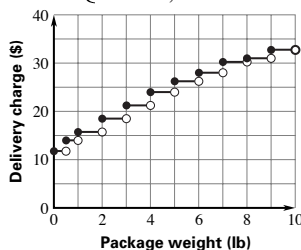
3 times the previous term. 51. geometric; Each term is $\frac{1}{10}$ the previous term. 53. $9, 6, 1, -6, -15$ 55. $1, 5, 14, 30, 55$

57. $a_n = 7 - 6n; a_1 = 1; a_n = a_{n-1} - 6$ 59. $a_n = 243 \left(\frac{1}{3}\right)^{n-1}; a_1 = 243; a_n = \frac{1}{3}a_{n-1}$ 61. 50 63. 16 65. 720 67. 70

69. 21 71. $8x^3 + 60x^2 + 150x + 125$ 73. $81x^4 - 108x^3 + 54x^2 - 12x + 1$ 75. $x^6 - 12x^4 + 48x^2 - 64$ 77. 0.2

79. $\frac{1}{32}$ 81. $\frac{5}{16}$ 83. $\frac{5}{32}$

85.
$$C(x) = \begin{cases} 11.75, & \text{if } 0 < x \leq 3 \\ 14.00, & \text{if } 3 < x \leq 4 \\ 15.75, & \text{if } 4 < x \leq 5 \\ 18.50, & \text{if } 5 < x \leq 6 \\ 21.25, & \text{if } 6 < x \leq 7 \\ 24.00, & \text{if } 7 < x \leq 8 \\ 26.25, & \text{if } 8 < x \leq 9 \\ 28.00, & \text{if } 9 < x \leq 10 \end{cases}$$



87. $a_n = 0.8a_{n-1} + 1000$;
It approaches a limit of 5000 fish. 89. $\frac{2}{5}$

CHAPTER 13

SKILL REVIEW (p. 768) 1. 12 2. 5 3. $3\sqrt{2}$ 4. $4\sqrt{6}$

5. $3\sqrt{2}$ 6. $10\sqrt{2}$ 7. $\sqrt{2}$ 8. $\frac{2\sqrt{3}}{3}$ 9. $\frac{\sqrt{3}}{2}$ 10. -1 11. $-\frac{5}{2}, \frac{5}{2}$
12. 14 13. -10

13.1 PRACTICE (pp. 772–774) 5. $\sin \theta = \frac{3}{5}; \cos \theta = \frac{4}{5};$

$\tan \theta = \frac{3}{4}; \csc \theta = \frac{5}{3}; \sec \theta = \frac{5}{4}; \cot \theta = \frac{4}{3}$ 7. $\sin \theta = \frac{\sqrt{5}}{3};$

$\cos \theta = \frac{2}{3}; \tan \theta = \frac{\sqrt{5}}{2}; \csc \theta = \frac{3\sqrt{5}}{5}; \sec \theta = \frac{3}{2}; \cot \theta = \frac{2\sqrt{5}}{5}$

9. $B = 15^\circ; a \approx 19.3; b \approx 5.18$ 11. $B = 28^\circ; a \approx 56.4; c \approx 63.9$

13. $A = 75^\circ; a \approx 157; c \approx 162$ 15. $\sin \theta = \frac{\sqrt{5}}{5}; \cos \theta = \frac{2\sqrt{5}}{5};$

$\tan \theta = \frac{1}{2}; \csc \theta = \sqrt{5}; \sec \theta = \frac{\sqrt{5}}{2}; \cot \theta = 2$

17. $\sin \theta = \frac{2\sqrt{14}}{9}; \cos \theta = \frac{5}{9}; \tan \theta = \frac{2\sqrt{14}}{5}; \csc \theta = \frac{9\sqrt{14}}{28};$

$\sec \theta = \frac{9}{5}; \cot \theta = \frac{5\sqrt{14}}{28}$ 19. $\sin \theta = \frac{9}{25}; \cos \theta = \frac{4\sqrt{34}}{25};$

$\tan \theta = \frac{9\sqrt{34}}{136}; \csc \theta = \frac{25}{9}; \sec \theta = \frac{25\sqrt{34}}{136}; \cot \theta = \frac{4\sqrt{34}}{9}$

21. ; $\sin \theta = \frac{5}{13}; \cos \theta = \frac{12}{13}; \tan \theta = \frac{5}{12};$
 $\csc \theta = \frac{13}{5}; \sec \theta = \frac{13}{12}; \cot \theta = \frac{12}{5}$

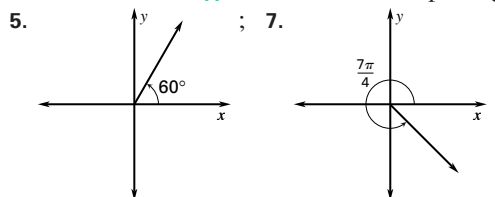
23. $\frac{\sqrt{22}}{2}; \frac{\sqrt{22}}{2}$ 25. 0.2419 27. 1.6643 29. 1.0154

31. 9.5668 33. $A = 66^\circ; b \approx 3.56; c \approx 8.76$ 35. $B = 71^\circ;$
 $a \approx 1.38; c \approx 4.23$ 37. $B = 61^\circ; a \approx 11.6; c \approx 24.0$

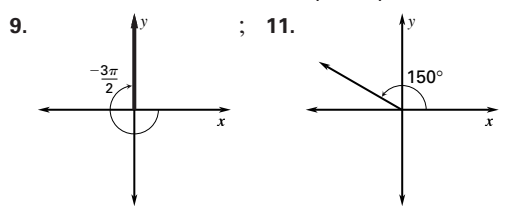
39. $A = 25^\circ; a \approx 5.07; b \approx 10.9$ 41. $96\sqrt{3}$ units²,
or about 166 units² 43. about 400 ft 45. about 4250 ft
47. about 425 m; about 432 m 49. about 12,350 ft

13.1 MIXED REVIEW (p. 775) 55. 157.5 mi 57. $\$3666$
59. parabola 61. circle 63. $\frac{16,016}{50,625}$, or about 0.316

13.2 PRACTICE (pp. 780–782) 5–11. Sample angles are given.



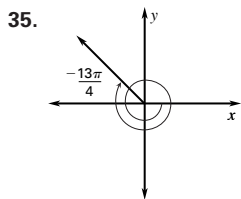
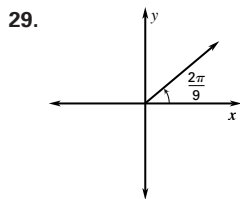
$420^\circ, -300^\circ$; $\frac{15\pi}{4}, -\frac{\pi}{4}$



$\frac{\pi}{2}, -\frac{7\pi}{2}$; $510^\circ, -210^\circ$

13. $\frac{\pi}{6}$ 15. $\frac{13\pi}{9}$ 17. 315° 19. 15° 21. $\frac{11\pi}{9}$ in.; $\frac{22\pi}{9}$ in.²

23. $\frac{17\pi}{18}$ cm; $\frac{17\pi}{18}$ cm² 25. C 27. A



- 37–43. Sample angles are given. 37. 570°; -150°
 39. 60°; -300° 41. $\frac{\pi}{4}$; $-\frac{7\pi}{4}$ 43. $\frac{4\pi}{3}$; $-\frac{2\pi}{3}$ 45. $\frac{5\pi}{4}$ 47. $\frac{\pi}{4}$
 49. $\frac{65\pi}{36}$ 51. $-\frac{29\pi}{18}$ 53. -810° 55. -75° 57. -675°
 59. 288° 61. $\frac{\pi}{6}$ ft; $\frac{\pi}{4}$ ft² 63. 6π in.; 36π in.² 65. $\frac{175\pi}{12}$ mm;
 $\frac{875\pi}{8}$ mm² 67. $\frac{40\pi}{9}$ cm; $\frac{320\pi}{9}$ cm² 69. $\frac{1}{2}$ 71. $\sqrt{3}$
 73. 1.3764 75. 0.6428 77. 540°; 3π 79. 1260°; 7π
 81. about 1820° or $\frac{91\pi}{9}$ radians 83. about 528 in.²
 85. 2π 87. $\frac{5}{3}$ in.

13.2 MIXED REVIEW (p. 783) 93. $5\sqrt{11}$ 95. 16 97. $\frac{\sqrt{7}}{4}$

99. $\frac{2\sqrt{14}}{7}$ 101. $\frac{4}{3}$ 103. $\frac{144}{35}$ 105. $\frac{100}{37}$ 107. $y^2 = 20x$
 109. $y^2 = 24x$ 111. $x^2 = -17.6y$

QUIZ 1 (p. 783) 1. $\sin \theta = \frac{8}{17}$; $\cos \theta = \frac{15}{17}$; $\tan \theta = \frac{8}{15}$;
 $\csc \theta = \frac{17}{8}$; $\sec \theta = \frac{17}{15}$; $\cot \theta = \frac{15}{8}$ 2. $\sin \theta = \frac{3\sqrt{58}}{58}$;
 $\cos \theta = \frac{7\sqrt{58}}{58}$; $\tan \theta = \frac{3}{7}$; $\csc \theta = \frac{\sqrt{58}}{3}$; $\sec \theta = \frac{\sqrt{58}}{7}$;
 $\cot \theta = \frac{7}{3}$ 3. $\sin \theta = \frac{6\sqrt{61}}{61}$; $\cos \theta = \frac{5\sqrt{61}}{61}$; $\tan \theta = \frac{6}{5}$;
 $\csc \theta = \frac{\sqrt{61}}{6}$; $\sec \theta = \frac{\sqrt{61}}{5}$; $\cot \theta = \frac{5}{6}$ 4. $A = 40^\circ$; $b \approx 21.5$

$c \approx 28.0$ 5. $B = 57^\circ$; $a \approx 6.54$; $b \approx 10.1$ 6. $B = 80^\circ$;
 $b \approx 17.0$; $c \approx 17.3$ 7. $A = 19^\circ$; $a \approx 0.749$; $b \approx 2.17$

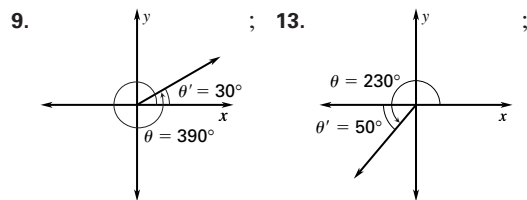
8–11. Sample answers are given. 8. 385°; -335°
 9. $\frac{4\pi}{3}$; $-\frac{8\pi}{3}$ 10. $\frac{\pi}{4}$; $-\frac{7\pi}{4}$ 11. 280°; -80° 12. 2π m; 6π m²
 13. $\frac{5\pi}{3}$ ft; $\frac{5\pi}{3}$ ft² 14. $\frac{8\pi}{9}$ cm; $\frac{32\pi}{9}$ cm² 15. $\frac{242\pi}{9}$ in.;

$\frac{2662\pi}{9}$ in.² 16. $\frac{25\pi}{12}$ ft; $\frac{125\pi}{24}$ ft² 17. $\frac{32\pi}{3}$ mm; 64π mm²

18. The 6 in. slice has an area of 18.85 in.² and costs about \$.80/in.², while the 7 in. slice has an area of about 19.24 in.² and costs about \$.09/in.². The 6 in. slice has a lower unit price, so it is a better deal.

13.3 PRACTICE (pp. 788–790)

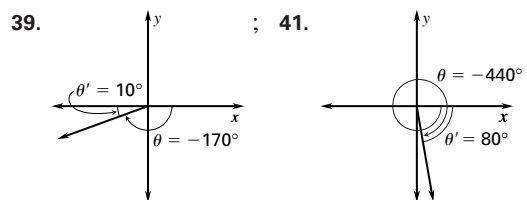
5. $\sin \theta = -\frac{5\sqrt{41}}{41}$; $\cos \theta = -\frac{4\sqrt{41}}{41}$; $\tan \theta = \frac{5}{4}$;
 $\csc \theta = -\frac{\sqrt{41}}{5}$; $\sec \theta = -\frac{\sqrt{41}}{4}$; $\cot \theta = \frac{4}{5}$



30° 50°
 15. $\sqrt{3}$ 17. $\sqrt{2}$ 19. $-\frac{1}{2}$ 21. $-\frac{\sqrt{3}}{3}$ 23. $\sin \theta = \frac{5}{13}$;
 $\cos \theta = -\frac{12}{13}$; $\tan \theta = -\frac{5}{12}$; $\csc \theta = \frac{13}{5}$; $\sec \theta = -\frac{13}{12}$;
 $\cot \theta = -\frac{12}{5}$ 25. $\sin \theta = \frac{14\sqrt{277}}{277}$; $\cos \theta = \frac{-9\sqrt{277}}{277}$;
 $\tan \theta = -\frac{14}{9}$; $\csc \theta = \frac{\sqrt{277}}{14}$; $\sec \theta = -\frac{\sqrt{277}}{9}$; $\cot \theta = -\frac{9}{14}$

27. $\sin \theta = \frac{\sqrt{2}}{2}$; $\cos \theta = -\frac{\sqrt{2}}{2}$; $\tan \theta = -1$; $\csc \theta = \sqrt{2}$;
 $\sec \theta = -\sqrt{2}$; $\cot \theta = -1$ 29. $\sin \theta = -\frac{3\sqrt{13}}{13}$;
 $\cos \theta = \frac{2\sqrt{13}}{13}$; $\tan \theta = -\frac{3}{2}$; $\csc \theta = -\frac{\sqrt{13}}{3}$; $\sec \theta = \frac{\sqrt{13}}{2}$;
 $\cot \theta = -\frac{2}{3}$ 31. $\sin \theta = -\frac{\sqrt{3}}{2}$; $\cos \theta = \frac{1}{2}$; $\tan \theta = -\sqrt{3}$;
 $\csc \theta = -\frac{2\sqrt{3}}{3}$; $\sec \theta = 2$; $\cot \theta = -\frac{\sqrt{3}}{3}$ 33. $\sin \theta = \frac{\sqrt{7}}{4}$;
 $\cos \theta = -\frac{3}{4}$; $\tan \theta = -\frac{\sqrt{7}}{3}$; $\csc \theta = \frac{4\sqrt{7}}{7}$; $\sec \theta = -\frac{4}{3}$;

$\cot \theta = -\frac{3\sqrt{7}}{7}$ 35. $\sin 270^\circ = -1$; $\cos 270^\circ = 0$; $\tan 270^\circ$
 is undefined; $\csc 270^\circ = -1$; $\sec 270^\circ$ is undefined;
 $\cot 270^\circ = 0$.

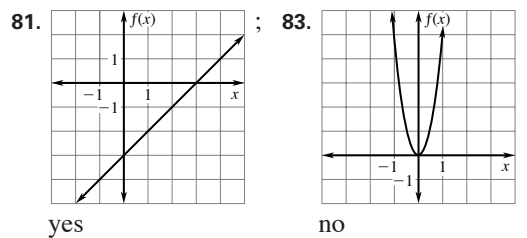


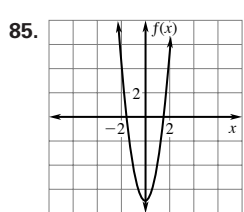
10° 80°
 43.

$\frac{\pi}{4}$ 45. $\frac{\sqrt{2}}{2}$ 47. $\frac{2\sqrt{3}}{3}$ 49. 2
 51. $-\frac{\sqrt{2}}{2}$ 53. $-\sqrt{3}$ 55. $-\frac{1}{2}$
 57. $-\frac{1}{2}$ 59. $-\frac{2\sqrt{3}}{3}$ 61. -1.3673
 63. -0.1736 65. 1.3764

67. -0.8090 69. about 16.5 ft/sec 71. about 7.4 ft
 73. about 22,800 mi 75. about (-24, 93)

13.3 MIXED REVIEW (p. 790)





85. ; no 87. $\frac{1}{52}$ 89. $\frac{4}{13}$
 91. $A = 70^\circ$; $a \approx 20.7$; $b \approx 7.52$
 93. $B = 40^\circ$; $a \approx 2.30$; $b \approx 1.93$
 95. $B = 7^\circ$; $b \approx 6.14$; $c \approx 50.4$

- 13.4 PRACTICE (pp. 795–797)** 5. $\frac{\pi}{3}$, or 60° 7. $\frac{\pi}{6}$, or 30°
 9. 1.32; 75.6° 11. 1.22; 70.1° 13. 200° 15. 295°
 17. about 42.3° 19. $\frac{\pi}{3}$; 60° 21. 0; 0° 23. $-\frac{\pi}{2}$; -90°
 25. $\frac{5\pi}{6}$; 150° 27. 48.2° 29. 120° 31. 18.4° 33. 1.33; 76.1°
 35. 0.848; 48.6° 37. 2.21; 127° 39. 1.15; 66.0°
 41. 1.43; 81.9° 43. 0.988; 56.6° 45. 247° 47. 127°
 49. 224° 51. 222° 53. about 44.4° 55. about 70.2°
 57. $\theta = \tan^{-1}(2.127t)$ 59. about 71.6° 61. $y = 1.6x + 3$

- 13.4 MIXED REVIEW (p. 798)** 65. 18 66. $\frac{21}{4}$ 67. -3
 68. -4 69. -3, 3 70. no solution 71. $\frac{1}{5}$ 72. $\frac{1}{3}$ 73. $\frac{1}{2}$
 74. $\frac{1}{3}$ 75. $\frac{11}{30}$ 76. $\frac{7}{30}$ 77. 0.4540 78. 0.3827 79. 0.3907
 80. 1.0642 81. 0.2126 82. -1.5890

- QUIZ 2 (p. 798)** 1. $\sin \theta = -\frac{16\sqrt{337}}{337}$; $\cos \theta = -\frac{9\sqrt{337}}{337}$;
 $\tan \theta = \frac{16}{9}$; $\csc \theta = -\frac{\sqrt{337}}{16}$; $\sec \theta = -\frac{\sqrt{337}}{9}$; $\cot \theta = \frac{9}{16}$
 2. $\sin \theta = -\frac{2\sqrt{53}}{53}$; $\cos \theta = \frac{7\sqrt{53}}{53}$; $\tan \theta = -\frac{2}{7}$;
 $\csc \theta = -\frac{\sqrt{53}}{2}$; $\sec \theta = \frac{\sqrt{53}}{7}$; $\cot \theta = -\frac{7}{2}$ 3. $\sin \theta = \frac{5\sqrt{26}}{26}$;
 $\cos \theta = -\frac{\sqrt{26}}{26}$; $\tan \theta = -5$; $\csc \theta = \frac{\sqrt{26}}{5}$; $\sec \theta = -\sqrt{26}$;
 $\cot \theta = -\frac{1}{5}$ 4. $\sin \theta = -\frac{11\sqrt{157}}{157}$; $\cos \theta = \frac{6\sqrt{157}}{157}$;
 $\tan \theta = -\frac{11}{6}$; $\csc \theta = -\frac{\sqrt{157}}{11}$; $\sec \theta = \frac{\sqrt{157}}{6}$; $\cot \theta = -\frac{6}{11}$
 5. $\sin \theta = \frac{2\sqrt{5}}{5}$; $\cos \theta = \frac{\sqrt{5}}{5}$; $\tan \theta = 2$; $\csc \theta = \frac{\sqrt{5}}{2}$;
 $\sec \theta = \sqrt{5}$; $\cot \theta = \frac{1}{2}$ 6. $\sin \theta = \frac{\sqrt{17}}{17}$; $\cos \theta = -\frac{4\sqrt{17}}{17}$;
 $\tan \theta = -\frac{1}{4}$; $\csc \theta = \sqrt{17}$; $\sec \theta = -\frac{\sqrt{17}}{4}$; $\cot \theta = -4$
 7. $\sin \theta = -\frac{5\sqrt{106}}{106}$; $\cos \theta = \frac{9\sqrt{106}}{106}$; $\tan \theta = -\frac{5}{9}$;
 $\csc \theta = -\frac{\sqrt{106}}{5}$; $\sec \theta = \frac{\sqrt{106}}{9}$; $\cot \theta = -\frac{9}{5}$
 8. $\sin \theta = -\frac{8\sqrt{113}}{113}$; $\cos \theta = -\frac{7\sqrt{113}}{113}$; $\tan \theta = \frac{8}{7}$;
 $\csc \theta = -\frac{\sqrt{113}}{8}$; $\sec \theta = -\frac{\sqrt{113}}{7}$; $\cot \theta = \frac{7}{8}$ 9. $-\frac{\sqrt{2}}{2}$
 10. $-\sqrt{3}$ 11. $\frac{1}{2}$ 12. $\sqrt{3}$ 13. $-\frac{\sqrt{3}}{2}$ 14. $-\frac{\sqrt{3}}{2}$ 15. $-\frac{\sqrt{3}}{3}$
 16. $-\frac{1}{2}$ 17. 1.16; 66.5° 18. -0.644; -36.9° 19. 0.318; 18.2°
 20. 0.232; 13.3° 21. -1.33; -76.0° 22. 2.50; 143°
 23. 0.100; 5.74° 24. 1.47; 84.3° 25. 166° 36. 282°
 27. 262° 28. 206° 29. 253° 30. 103° 31. about 47 ft

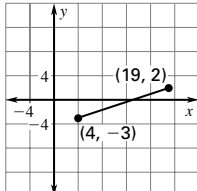
- 13.5 PRACTICE (pp. 803–806)** 5. no triangle 7. two triangles
 9. $A \approx 35.8^\circ$; $B \approx 49.2^\circ$; $a = 14.7$ 11. 2.19 units²
 13. 125 units² 15. about \$62,400 17. no triangle
 19. two triangles 21. one triangle 23. no triangle
 25. $C = 75^\circ$; $a \approx 24.9$; $b \approx 30.5$ 27. $A \approx 84.7^\circ$; $C \approx 35.3^\circ$;
 $a \approx 34.5$ 29. no triangle 31. $A \approx 62.3^\circ$; $B \approx 22.7^\circ$; $b \approx 3.48$
 33. $A \approx 111.6^\circ$; $B \approx 52.4^\circ$; $a \approx 108$, or $A \approx 36.4^\circ$; $B \approx 127.6^\circ$;
 $a \approx 68.9$ 35. $A \approx 15.4^\circ$; $C \approx 129.6^\circ$ $c \approx 34.9$ 37. 119 units²
 39. 17.3 units² 41. 162 units² 43. 9.83 units²
 45. 67.1 units² 47. 76.1 units² 49. 9.06 units²
 51. 85.7 units² 53. *Sample answer:* Let the side lengths
 be 10 and 15. The equation is $A = 75 \sin x$. 55. 90°
 57. about 22.5 mi 61. 31.8° , or 8.2° 63. about 155.4 ft
 65. 21 bags 67. about 0.57 gal, so buy a single gallon can

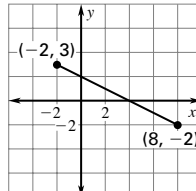
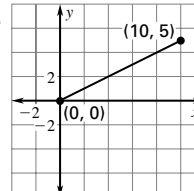
- 13.5 MIXED REVIEW (p. 806)** 71. $23\sqrt{3}$ 73. $8\sqrt{7}$
 75. $28\sqrt{2}$ 77. 0.3090 79. -0.2225 81. 0.5736 83. 0.9962

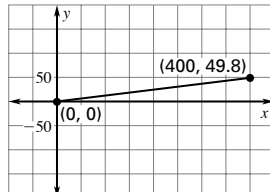
- 13.6 PRACTICE (pp. 810–812)** 5. $b \approx 43.0$; $A \approx 107.4^\circ$;
 $C \approx 52.7^\circ$ 7. $A \approx 82.2^\circ$; $B \approx 25.8^\circ$; $C \approx 72.0^\circ$
 9. 510 units² 11. 1470 units² 13. about 63.7 ft
 15. $c \approx 4.60$; $A \approx 35.2^\circ$; $B \approx 112.8^\circ$ 17. $c \approx 12.9$; $A \approx 48.6^\circ$;
 $B \approx 91.4^\circ$ 19. $c \approx 16.3$; $A \approx 37.7^\circ$; $B \approx 47.3^\circ$ 21. $A \approx 22.3^\circ$;
 $B \approx 49.5^\circ$; $C \approx 108.2^\circ$ 23. $a \approx 29.1$; $B \approx 63.4^\circ$; $C \approx 56.6^\circ$
 25. $c \approx 10.4$; $A = 75^\circ$; $B = 75^\circ$ 27. $b \approx 6.40$; $A \approx 150.9^\circ$;
 $C \approx 14.1^\circ$ 29. $A \approx 47.0^\circ$; $B \approx 27.8^\circ$; $C \approx 105.1^\circ$
 31. $A = 70^\circ$; $a \approx 32.4$; $c \approx 17.3$ 33. $a \approx 27.5$; $A \approx 56.5^\circ$;
 $B \approx 19.5^\circ$ 35. $A \approx 64.3^\circ$; $B \approx 73.2^\circ$; $C \approx 42.5^\circ$
 37. $c \approx 11.7$; $A \approx 20.0^\circ$; $B \approx 70.0^\circ$ 39. 14.0 units²
 41. 150 units² 43. 2210 units² 45. 3.87 units²
 47. 27.7 units² 51. about 74.4 ft 53. about 7800 mi²

- 13.6 MIXED REVIEW (p. 812)** 59. $\frac{y^2}{9} - \frac{x^2}{112} = 1$
 61. $y^2 - \frac{x^2}{19} = 1$ 63. 0.137 65. 0.160 67. 0.0130

13.7 PRACTICE (pp. 816–818)

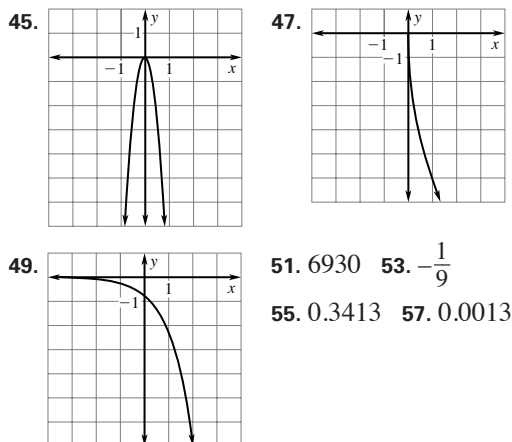
5.  7. $y = \frac{3}{7}x - 2$; $0 \leq x \leq 35$
 9. $y = (\tan 72.1^\circ)x + 3$, or
 $y = 3.10x + 3$; $0 \leq x \leq 35.3$

11.  13. 

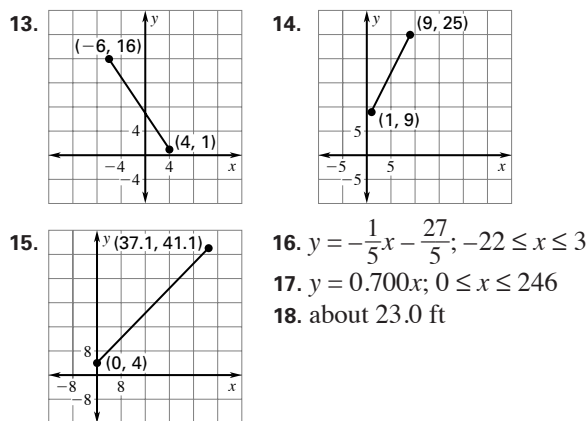
15.  17. $y = 2x - 5$; $1 \leq x \leq 6$
 19. $y = x$; $0 \leq x \leq 100$
 21. $x = (20.0 \cos 71.6^\circ)t$, or
 $x = 6.31t$;
 $y = (20.0 \sin 71.6^\circ)t$, or
 $y = 19.0t$; $0 \leq t \leq 3$

23. $x = (13.0 \cos 80.0^\circ)t + 3$, or $x = 2.26t + 3$;
 $y = (13.0 \sin 80.0^\circ)t + 2$, or $y = 12.8t + 2$; $0 \leq t \leq 5$
 25. $x = (10 \cos 143.13^\circ)t + 2.0$; $y = (10 \sin 143.13^\circ)t$
 27. about 3774 sec, or about 63 min 29. $x = 260t$;
 $y = 10,000 - 30t$ 31. about 333 sec, or 5 min 33 sec
 33. $x = (17.9 \cos 14.3^\circ)t$, or $x = 17.3t$; $y = -4.9t^2 +$
 $(17.9 \sin 14.3^\circ)t + 1.71$, or $y = -4.9t^2 + 4.42t + 1.71$
 35. about 20.7 m 37. about 1.49 sec 39. $x = (v \cos 43^\circ)t$,
 or $x = 0.731vt$; $y = -16t^2 + (v \sin 43^\circ)t + 6$, or
 $y = -16t^2 + 0.682vt + 6$

13.7 MIXED REVIEW (p. 819)



- QUIZ 3 (p. 819)** 1. $A \approx 58.5^\circ$; $C \approx 51.5^\circ$; $a \approx 27.2$
 2. $A = 70^\circ$; $b \approx 2.77$; $c \approx 15.7$ 3. $C = 30^\circ$; $a \approx 20.5$; $c \approx 16.0$
 4. no triangle 5. $A \approx 106.1^\circ$; $B \approx 43.1^\circ$; $C \approx 30.8^\circ$
 6. $a = 35.4$; $B = 23.9^\circ$; $C = 49.1^\circ$ 7. 179 units²
 8. 499 units² 9. 57.0 units² 10. 16.3 units²
 11. 1950 units² 12. 334 units²



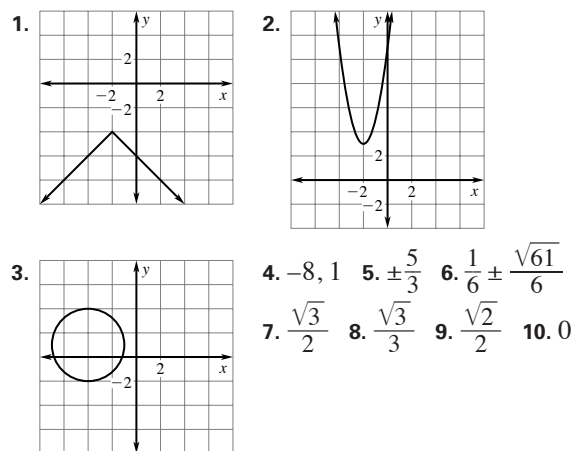
TECHNOLOGY ACTIVITY 13.7 (p. 820) 1. 390; 423; 443;
 443; 423; 390 2. 45° ; the results look to be symmetric
 around the value $\theta = 45^\circ$, with a maximum at that angle.

- CHAPTER REVIEW (pp. 822–824)** 1. $\sin \theta = \frac{3}{5}$; $\cos \theta = \frac{4}{5}$;
 $\tan \theta = \frac{3}{4}$; $\csc \theta = \frac{5}{3}$; $\sec \theta = \frac{5}{4}$; $\cot \theta = \frac{4}{3}$

3. $\sin \theta = \frac{\sqrt{2}}{2}$; $\cos \theta = \frac{\sqrt{2}}{2}$; $\tan \theta = 1$; $\csc \theta = \sqrt{2}$;
 $\sec \theta = \sqrt{2}$; $\cot \theta = 1$ 5. $\frac{\pi}{6}$ 7. $-\frac{\pi}{12}$ 9. 300° 11. $\frac{5\pi}{2}$ ft,
 $\frac{25\pi}{4}$ ft² 13. $\frac{56\pi}{3}$ cm, $\frac{448\pi}{3}$ cm² 15. $\frac{\sqrt{3}}{2}$ 17. $\frac{1}{2}$ 19. $\frac{\pi}{4}$, 45°
 21. $\frac{\pi}{2}$, 90° 23. $\frac{2\pi}{3}$, 120° 25. $A = 29.3^\circ$; $C = 132.7^\circ$;
 $c = 28.5$ or $A = 150.7^\circ$; $C = 11.3^\circ$; $c = 7.60$ 27. 63.1 units²
 29. 98.3 units² 31. $C = 107^\circ$, $A = 24^\circ$, $B = 49^\circ$ 33. 9.9 units²
 35. 46.4 units² 39. $y = -2x - 1$; $-3 \leq x \leq 13$

CHAPTER 14

SKILL REVIEW (p. 830)



11. $\frac{\pi}{4}$, 45° 12. $\frac{\pi}{6}$, 30° 13. $\frac{\pi}{2}$, 90° 14. $-\frac{\pi}{3}$, -60°

- 14.1 PRACTICE (pp. 835–837)** 5. amplitude: 3, period: 2
 7. amplitude: $\frac{2}{3}$, period: 6 9. amplitude: 1, period: 4π

