

## Answers for 9.1

For use with pages 617–619

### 9.1 Skill Practice

1. The distance  $d$  between  $(x_1, y_1)$  and  $(x_2, y_2)$  is

$$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2};$$

the midpoint of the line segment joining  $A(x_1, y_1)$  and  $B(x_2, y_2)$  is

$$M\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right).$$

2. No; addition is a commutative operation.
3.  $17; \left(4, \frac{15}{2}\right)$       4.  $2\sqrt{5}; (2, 1)$
5.  $5\sqrt{5}; \left(\frac{5}{2}, 1\right)$       6.  $3\sqrt{17}; \left(-1, \frac{3}{2}\right)$
7.  $4\sqrt{2}; (4, -3)$
8.  $3\sqrt{13}; \left(\frac{7}{2}, 1\right)$
9.  $12\sqrt{2}; (2, 2)$
10.  $2\sqrt{13}; (8, -6)$
11.  $\sqrt{145}; \left(\frac{1}{2}, 0\right)$
12.  $25; \left(\frac{29}{2}, 0\right)$
13.  $\sqrt{449}; \left(5, \frac{9}{2}\right)$
14.  $25\sqrt{2}; \left(-\frac{7}{2}, -\frac{7}{2}\right)$
15.  $2\sqrt{194}; (1.2, 2)$
16.  $\frac{\sqrt{641}}{5}$  or about 5.06;  $(1.9, 6.5)$
17.  $\frac{\sqrt{3221}}{10}$  or about 5.68;  $(0.35, -6)$
18. C                      19. A
20.  $-1$  should be subtracted from 6 not 1;  
 $d = \sqrt{(2 - 5)^2 + 6 - (-1)^2}$   
 $= \sqrt{9 + 49} = \sqrt{58}.$
21. The difference of the squares should be added not subtracted;  
 $d = \sqrt{(2 - (-4))^2 + (8 - 3)^2}$   
 $= \sqrt{36 + 25} = \sqrt{61}.$
22. isosceles      23. isosceles
24. scalene      25. scalene
26. isosceles      27. scalene
28. scalene      29. scalene
30. isosceles
31.  $y = -\frac{2}{3}x + \frac{43}{3}$
32.  $y = -3x + 1$
33.  $y = -\frac{1}{4}x - \frac{5}{2}$
34.  $y = \frac{1}{2}x - \frac{11}{4}$
35.  $y = -4x + \frac{17}{2}$

## Answers for 9.1 *continued*

For use with pages 617–619

36.  $y = \frac{5}{3}x - 4$

37. *Sample answer:* (6, 4), (2, 0)

38.  $y = \frac{4}{3}x - \frac{20}{3}$

39.  $y = -\frac{5}{4}x + \frac{55}{4}$

40.  $y = -x + 8$

41.  $\pm 6$                       42.  $-5, 3$

43.  $-10, 2$                   44.  $8, 18$

45.  $d(x) = \sqrt{5x^2 - 16x + 13};$

$\left(\frac{1}{5}, \frac{2}{5}\right), (3, 6)$

46. *Sample answer:*

$$\sqrt{\left(\frac{x_1 + x_2}{2} - x_1\right)^2 + \left(\frac{y_1 + y_2}{2} - y_1\right)^2} =$$

$$\frac{\sqrt{x_1^2 - 2x_1x_2 + x_2^2 + y_1^2 - 2y_1y_2 + y_2^2}}{2},$$

$$\sqrt{\left(\frac{x_1 + x_2}{2} - x_2\right)^2 + \left(\frac{y_1 + y_2}{2} - y_2\right)^2} =$$

$$\frac{\sqrt{x_1^2 - 2x_1x_2 + x_2^2 + y_1^2 - 2y_1y_2 + y_2^2}}{2};$$

$$y - y_1 = \left(\frac{y_2 - y_1}{x_2 - x_1}\right)(x - x_1),$$

$$\frac{y_1 + y_2}{2} - y_1 = \frac{y_2 - y_1}{x_2 - x_1} \left(\frac{x_1 + x_2}{2} - x_2\right),$$

$$\frac{y_2 - y_1}{2} = \frac{y_2 - y_1}{2}$$

Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

### 9.1 Problem Solving

47. 17 m

48. about 2.55 mi

49. about 6.02 mi

50. about 1.91 mi

51. about 4.55 mi

52. about 5.39 mi

53. a.  $(-1.5, 8)$

b. about 1.32 mi

c. about 1.68 mi

54. about 11.75 in.

55. about 550 ft

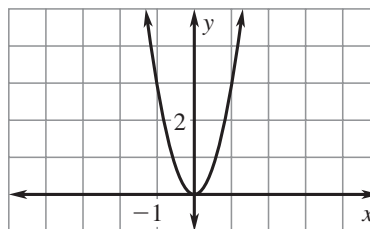
56. a.  $\left(\frac{x_1}{2}, \frac{y_1}{2}\right), \left(\frac{x_1 + x_2}{2}, \frac{y_1}{2}\right)$

b.  $\frac{x_2}{2}$ ; the strip is one-half the length of the base.

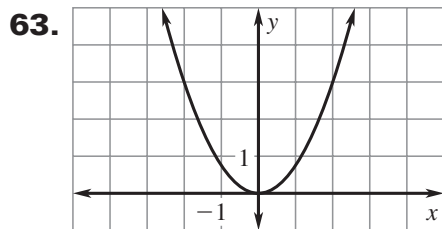
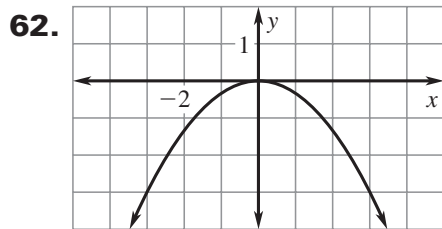
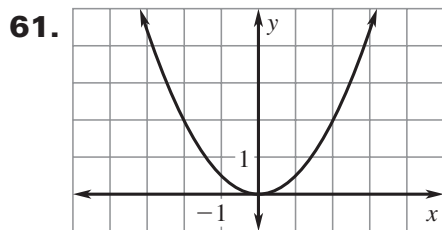
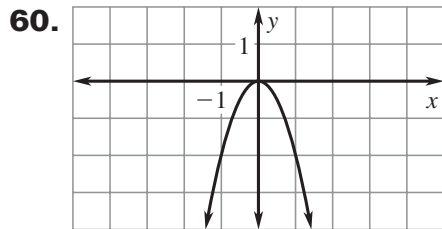
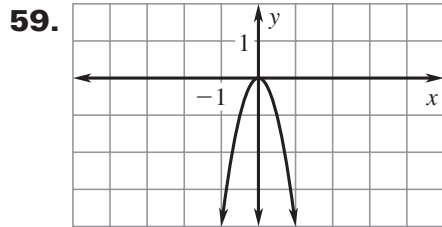
57.  $\frac{7}{6} \leq t \leq \frac{13}{6}$

### 9.1 Mixed Review

58.



**Answers for 9.1** *continued*  
 For use with pages 617–619



**64.**  $(x - 8)(x + 2)$

**65.**  $(x - 9)(x - 6)$

**66.**  $(8x + 5)(x + 4)$

**67.**  $(3x - 1)(4x - 3)$

**68.**  $(x - 3)(x + 3)(x + 5)$

**69.**  $(x - 4)(x^2 + 4x + 16)$

**70.** 33                      **71.** 5

**72.** 7                        **73.** 6, -1

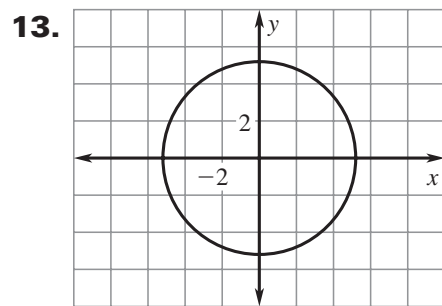
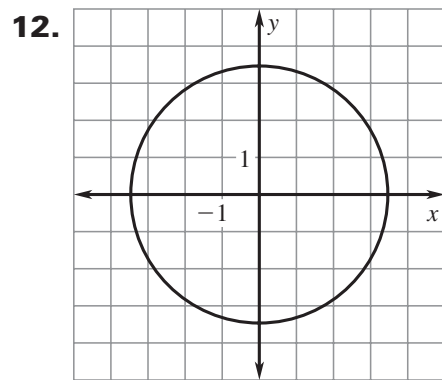
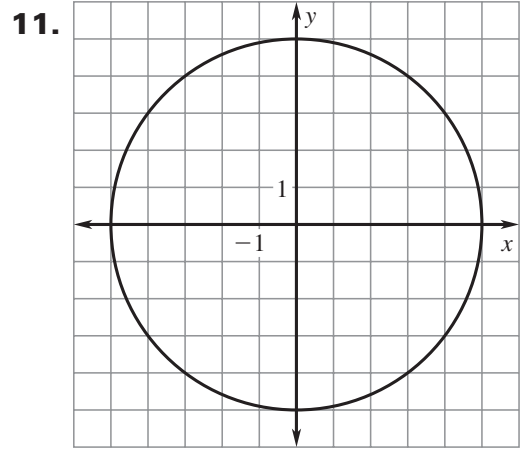
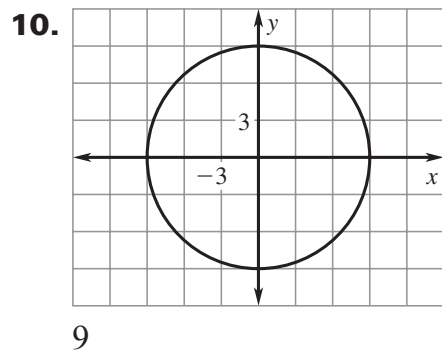
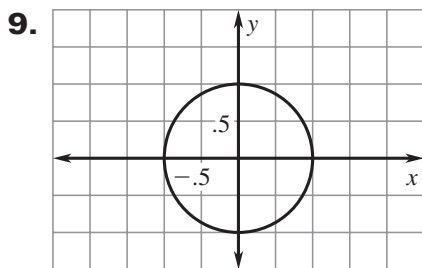
**74.** 10                      **75.** 4

# Answers for 9.3

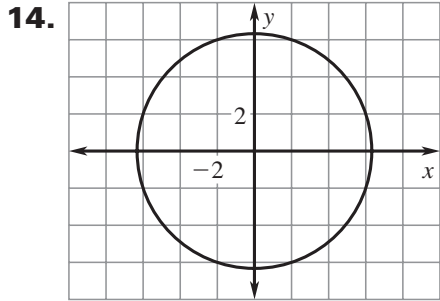
For use with pages 629–632

## 9.3 Skill Practice

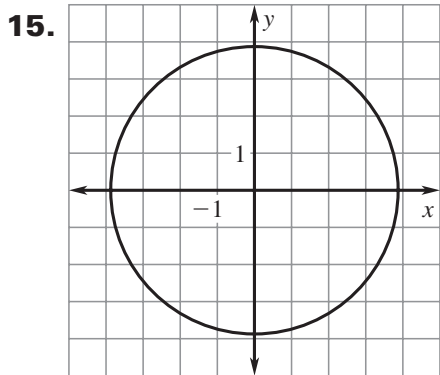
- center
- They are opposite reciprocals of one another.
- C      4. E      5. A
- D      7. F      8. B



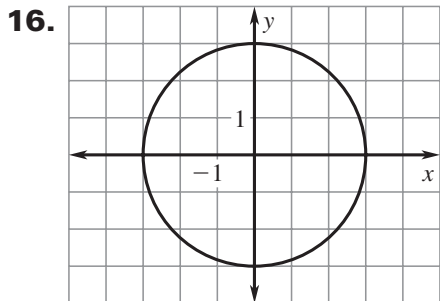
**Answers for 9.3** *continued*  
 For use with pages 629–632



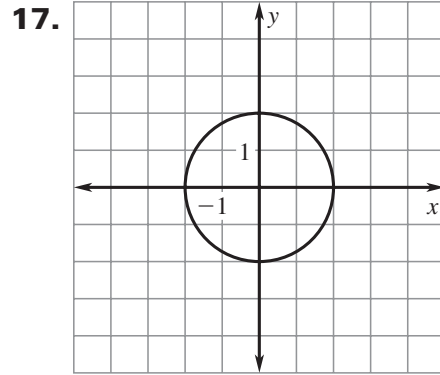
$2\sqrt{10}$



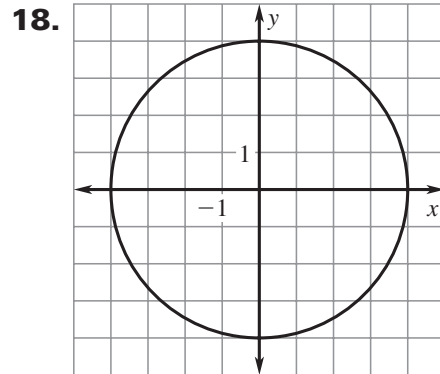
$\sqrt{15}$



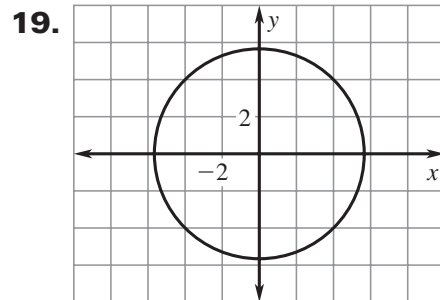
3



2



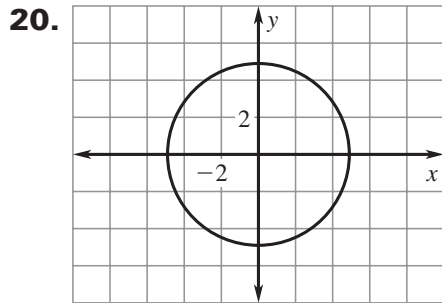
4



$4\sqrt{2}$

Copyright © by McDougal Littell, a division of Houghton Mifflin Company.

**Answers for 9.3** *continued*  
For use with pages 629–632



$2\sqrt{6}$

**21.** A

**22.**  $x^2 + y^2 = 144$

**23.**  $x^2 + y^2 = 64$

**24.**  $x^2 + y^2 = 4$

**25.**  $x^2 + y^2 = 256$

**26.**  $x^2 + y^2 = 2$

**27.**  $x^2 + y^2 = 15$

**28.**  $x^2 + y^2 = 50$

**29.**  $x^2 + y^2 = 96$

**30.** The radius should be squared;  
 $x^2 + y^2 = 144.$

**31.**  $x^2 + y^2 = 36$

**32.**  $x^2 + y^2 = 25$

**33.**  $x^2 + y^2 = 25$

**34.**  $x^2 + y^2 = 20$

**35.**  $x^2 + y^2 = 100$

**36.**  $x^2 + y^2 = 85$

**37.**  $x^2 + y^2 = 116$

**38.**  $x^2 + y^2 = 89$

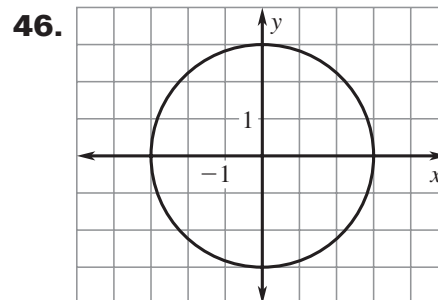
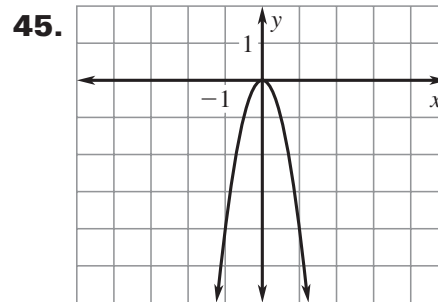
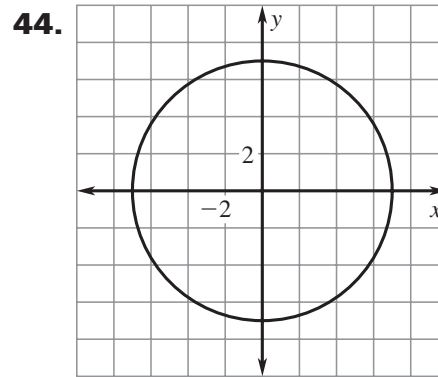
**39.**  $x^2 + y^2 = 260$

**40.**  $x^2 + y^2 = 169$

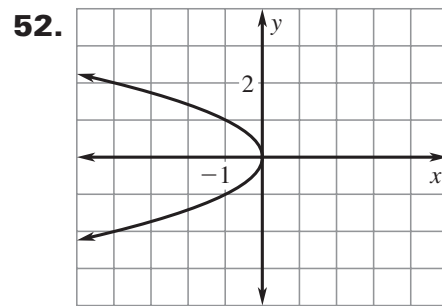
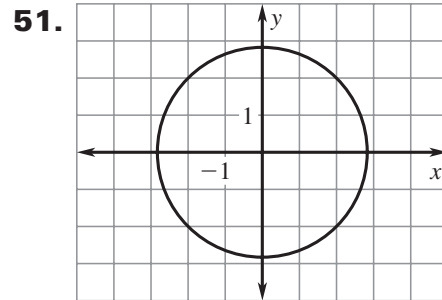
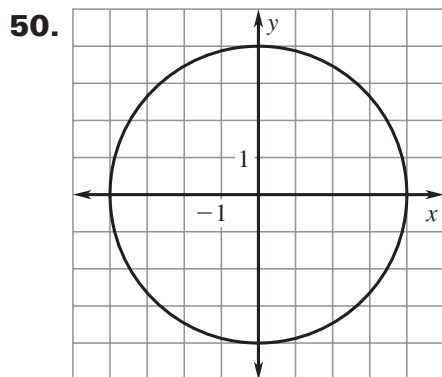
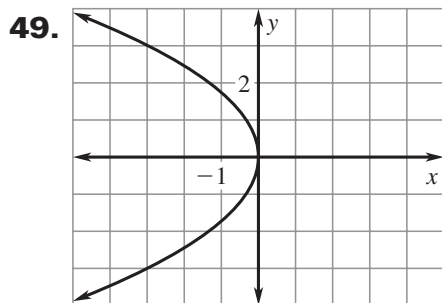
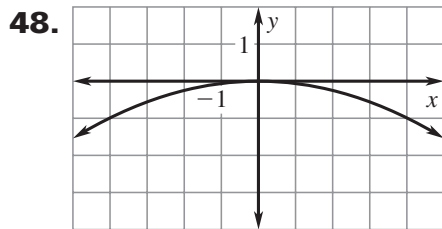
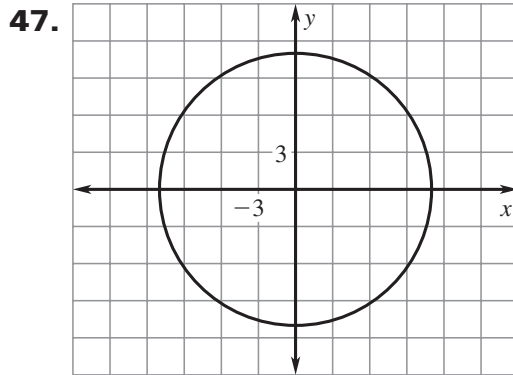
**41.**  $x^2 + y^2 = 242$

**42.**  $x^2 + y^2 = 1681$

**43.** C



**Answers for 9.3** *continued*  
For use with pages 629–632



**53.**  $y = -\frac{1}{4}x + \frac{17}{4}$

**54.**  $y = \frac{2}{3}x - \frac{13}{3}$

**55.**  $y = \frac{5}{3}x + \frac{34}{3}$

**56.**  $y = -3x - 20$

**57.**  $y = \frac{5}{9}x + \frac{106}{9}$

**58.**  $y = -3x + 50$

**59.** *Sample answer:*  $x^2 + y^2 = 35$ ,  
 $x^2 + y^2 = 36$ ,  $x^2 + y^2 = 38$

**60.** *Sample answer:*  $m_1 = \frac{\sqrt{r^2 - x^2}}{x + r}$ ,  
 $m_2 = \frac{\sqrt{r^2 - x^2}}{x - r}$ ,  $m_1 m_2 = -1$

**61.**  $l = r\sqrt{3}$

**Answers for 9.3** *continued*  
For use with pages 629–632

**9.3 Problem Solving**

**62.** yes      **63.** yes      **64.** D

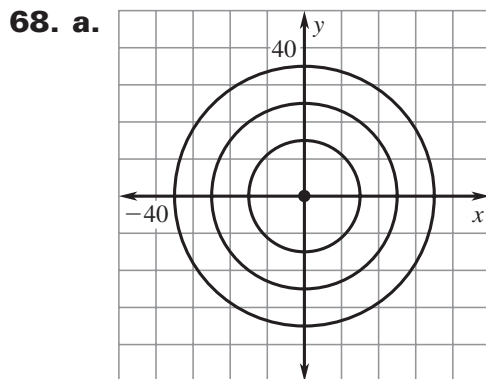
**65. a.** about 28.9 mi

**b.** about 18.3 mi

**c.** about 6 mi

**66.** Yes. *Sample answer:* The height of the tunnel at the center of the walkway is about 79.7 inches and the worker is only 74 inches tall.

**67.** about 7.94 ft



**b.**  $x^2 + y^2 \leq 0$ ,  $x^2 + y^2 \leq 225$ ,  
 $x^2 + y^2 \leq 625$ ,  $x^2 + y^2 \leq 1225$

**c.** It will be at least 5.4;  
 $400 < 625$  so it will be at least  
a 5.4 rating.

**69.** about 18 min

**9.3 Mixed Review**

**70.** (9, -5)      **71.** (-3, -7)

**72.** (4, 1)      **73.** (-3, 1, 6)

**74.** (-2, 8, 4)      **75.** (0, 4, 7)

**76.**  $\begin{bmatrix} 34 & -5 & -3 \\ 20 & 10 & 17 \end{bmatrix}$

**77.**  $\begin{bmatrix} -53 & -13 \\ 40 & 9 \\ 53 & 24 \end{bmatrix}$

**78.** The number of columns in the first matrix does not match the number of rows in the second matrix.

**79.**  $\pm 2\sqrt{15}$       **80.**  $\pm 5\sqrt{2}$

**81.**  $\pm 9$       **82.**  $\pm 12$

**83.**  $\pm 2\sqrt{7}$       **84.**  $\pm 4\sqrt{14}$