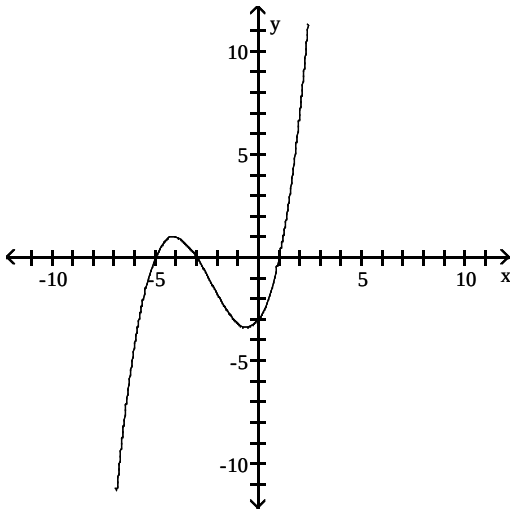
Name_____

List the intercepts of the graph.

1) **1)** _____



Objective: (1.2) Find Intercepts from a Graph

List the intercepts for the graph of the equation.

2) $y^2 = x + 1$ **2)** _____

Objective: (1.2) Find Intercepts from an Equation

3) $x^2 + y - 9 = 0$ **3)** _____

Objective: (1.2) Find Intercepts from an Equation

4) $4x^2 + y^2 = 4$ **4)** _____

Objective: (1.2) Find Intercepts from an Equation

5) $y = \dfrac{4x}{x^2 + 16}$ **5)** _____

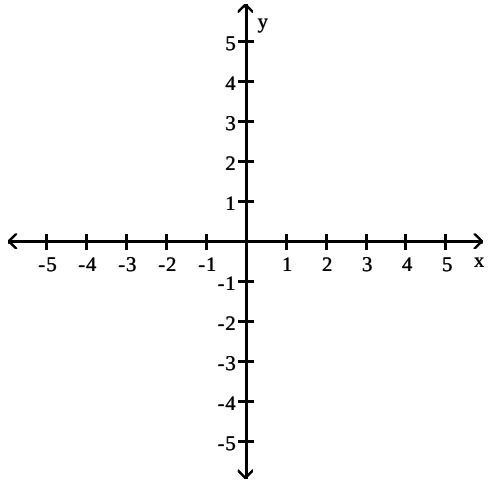
Objective: (1.2) Find Intercepts from an Equation

6) $y = \dfrac{x^2 - 81}{9x^4}$ **6)** _____

Objective: (1.2) Find Intercepts from an Equation

Plot the point A. Plot the point B that has the given symmetry with point A.

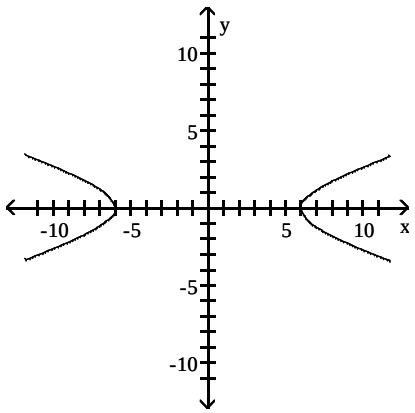
7) A = (3, 2); B is symmetric to A with respect to the origin **7)** _____



Objective: (1.2) Test an Equation for Symmetry with Respect to the x-Axis, the y-Axis, and the Origin

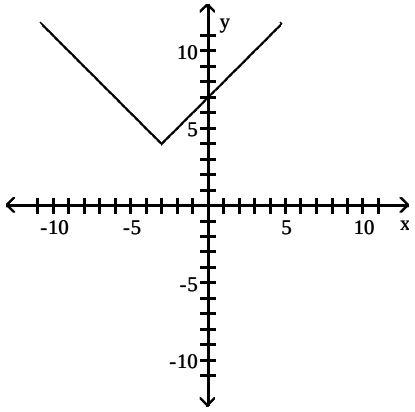
List the intercepts of the graph.Tell whether the graph is symmetric with respect to the x–axis, y–axis, origin, or none of these.

8) **8)** _____



Objective: (1.2) Test an Equation for Symmetry with Respect to the x–Axis, the y–Axis, and the Origin

9) **9)** _____



Objective: (1.2) Test an Equation for Symmetry with Respect to the x–Axis, the y–Axis, and the Origin

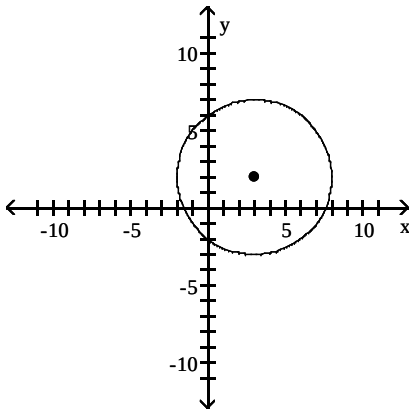
Determine whether the graph of the equation is symmetric with respect to the x –axis, the y–axis, and/or the origin.

10) $y = \dfrac{x^2 - 9}{3x^4}$ **10)** _____

Objective: (1.2) Test an Equation for Symmetry with Respect to the x–Axis, the y–Axis, and the Origin

Write the standard form of the equation of the circle.

11) **11)** _____



Objective: (1.4) Write the Standard Form of the Equation of a Circle

Write the standard form of the equation of the circle with radius r and center (h, k).

12) $r = 6$; $(h, k) = (2, -3)$ **12)** _____

Objective: (1.4) Write the Standard Form of the Equation of a Circle

Find the center (h, k) and radius r of the circle with the given equation.

13) $(x + 10)^2 + (y - 8)^2 = 81$ **13)** _____

Objective: (1.4) Write the Standard Form of the Equation of a Circle

14) $x^2 + (y + 10)^2 = 100$ **14)** _____

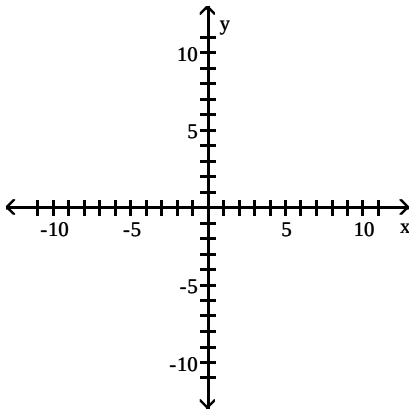
Objective: (1.4) Write the Standard Form of the Equation of a Circle

15) $5(x + 6)^2 + 5(y + 2)^2 = 30$ **15)** _____

Objective: (1.4) Write the Standard Form of the Equation of a Circle

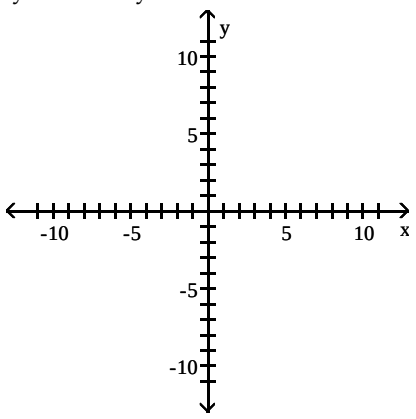
Find the center (h, k) and radius r of the circle. Graph the circle.

16) $x^2 + y^2 - 10x - 4y + 4 = 0$ **16)** _____



Objective: (1.4) Work with the General Form of the Equation of a Circle

17) $x^2 + y^2 + 2x + 6y + 6 = 0$ **17)** _____



Objective: (1.4) Work with the General Form of the Equation of a Circle

Find the center (h, k) and radius r of the circle with the given equation.

18) $x^2 + y^2 - 8x + 16y = -71$ **18)** _____

Objective: (1.4) Work with the General Form of the Equation of a Circle

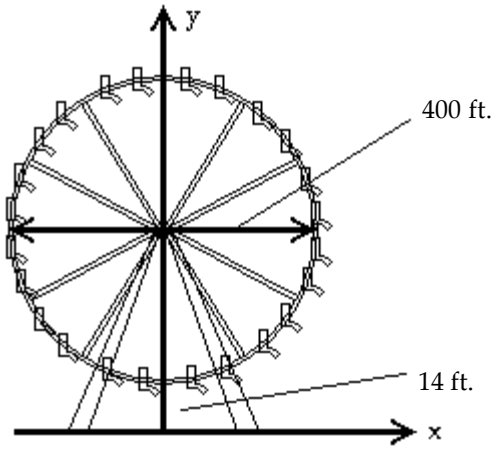
Find the general form of the equation of the the circle.

19) Center at the point (2, –3); containing the point (5, –3) **19)** _____

Objective: (1.4) Work with the General Form of the Equation of a Circle

Solve the problem.

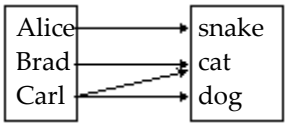
20) A Ferris wheel has a diameter of 400 feet and the bottom of the Ferris wheel is 14 feet above the ground. Find the equation of the wheel if the origin is placed on the ground directly below the center of the wheel, as illustrated. **20)** _____



Objective: (1.4) Work with the General Form of the Equation of a Circle

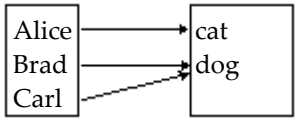
Determine whether the relation represents a function. If it is a function, state the domain and range.

21) **21)** _____



Objective: (2.1) Determine Whether a Relation Represents a Function

22) **22)** _____



Objective: (2.1) Determine Whether a Relation Represents a Function

23) {(41, –2), (5, –1), (5, 0), (6, 1), (14, 3)} **23)** _____

Objective: (2.1) Determine Whether a Relation Represents a Function

Determine whether the equation defines y as a function of x.

24) $y = \frac{1}{x}$ **24)** _____

Objective: (2.1) Determine Whether a Relation Represents a Function

25) $y = \pm\sqrt{1 - 6x}$ **25)** _____

Objective: (2.1) Determine Whether a Relation Represents a Function

26) $x = y^2$ **26)** _____

Objective: (2.1) Determine Whether a Relation Represents a Function

27) $y = 4x^2 - 7x + 5$ **27)** _____

Objective: (2.1) Determine Whether a Relation Represents a Function

Find the value for the function.

28) Find $f(-1)$ when $f(x) = \frac{x^2 - 8}{x - 3}$. **28)** _____

Objective: (2.1) Find the Value of a Function

29) Find $f(-x)$ when $f(x) = -3x^2 + 4x - 5$. **29)** _____

Objective: (2.1) Find the Value of a Function

30) Find $f(x - 1)$ when $f(x) = 4x^2 - 3x + 3$. **30)** _____

Objective: (2.1) Find the Value of a Function

31) Find $f(x + h)$ when $f(x) = 2x^2 + 4x + 4$. **31)** _____

Objective: (2.1) Find the Value of a Function

Solve the problem.

32) If $f(x) = \dfrac{x - 5A}{10x + 1}$ and $f(10) = -10$, what is the value of A? **32)** _____

Objective: (2.1) Find the Value of a Function

33) If a rock falls from a height of 90 meters on Earth, the height H (in meters) after x seconds is approximately **33)** _____

$H(x) = 90 - 4.9x^2$.

When does the rock strike the ground? Round to the nearest hundredth, if necessary.

Objective: (2.1) Find the Value of a Function

Find the domain of the function.

34) $g(x) = \dfrac{3x}{x^2 - 25}$ **34)** _____

Objective: (2.1) Find the Domain of a Function Defined by an Equation

35) $f(x) = \sqrt{13 - x}$ **35)** _____

Objective: (2.1) Find the Domain of a Function Defined by an Equation

36) $\dfrac{x}{\sqrt{x - 6}}$ **36)** _____

Objective: (2.1) Find the Domain of a Function Defined by an Equation

For the given functions f and g, find the requested function and state its domain.

37) $f(x) = 9 - 9x;\ g(x) = -7x + 9$ **37)** _____

Find $f + g$.

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

38) $f(x) = 7x - 4;\ g(x) = 9x - 9$ **38)** _____

Find $f \cdot g$.

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

39) $f(x) = \sqrt{x};\ g(x) = 4x - 9$ **39)** _____

Find $\dfrac{f}{g}$.

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

40) $f(x) = \sqrt{x + 11};\ g(x) = \dfrac{4}{x}$ **40)** _____

Find $f \cdot g$.

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

Solve the problem.

41) Find (fg)(4) when $f(x) = x - 3$ and $g(x) = -5x^2 + 12x - 4$. **41)** _____

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

42) Find $\left(\frac{f}{g}\right)(-2)$ when $f(x) = 2x - 5$ and $g(x) = 3x^2 + 14x + 4$. **42)** _____

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

Find and simplify the difference quotient of f, $\frac{f(x+h) - f(x)}{h}$, $h \neq 0$, for the function.

43) $f(x) = 8x - 1$ **43)** _____

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

44) $f(x) = 3x^2$ **44)** _____

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

Solve the problem.

45) Express the gross salary G of a person who earns $10 per hour as a function of the number x of hours worked. **45)** _____

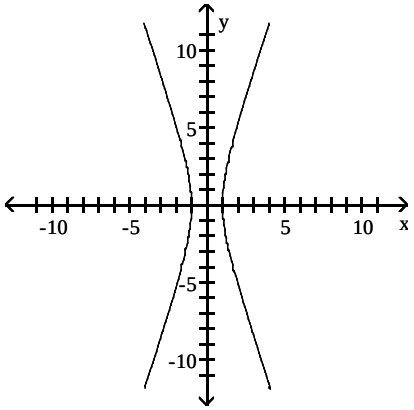
Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

46) Jacey, a commissioned salesperson, earns $370 base pay plus $30 per item sold. Express Jacey's gross salary G as a function of the number x of items sold. **46)** _____

Objective: (2.1) Form the Sum, Difference, Product, and Quotient of Two Functions

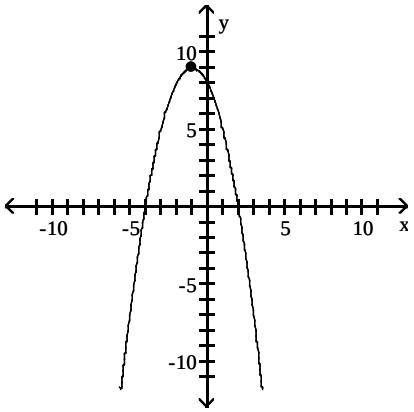
Determine whether the graph is that of a function. If it is, use the graph to find its domain and range, the intercepts, if any, and any symmetry with respect to the x–axis, the y–axis, or the origin.

47) **47)** _____



Objective: (2.2) Identify the Graph of a Function

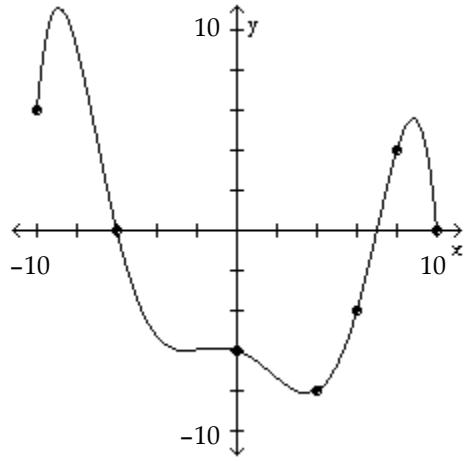
48) **48)** _____



Objective: (2.2) Identify the Graph of a Function

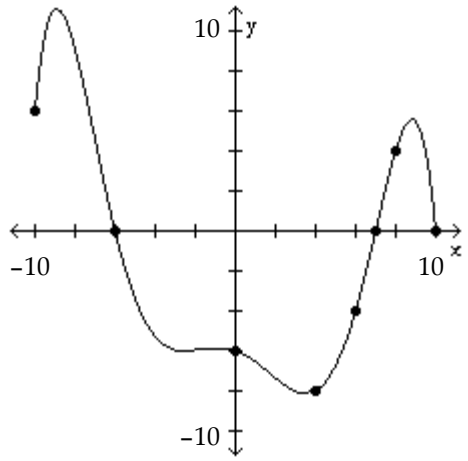
The graph of a function f is given. Use the graph to answer the question.

49) Is f(8) positive or negative? **49)** _____



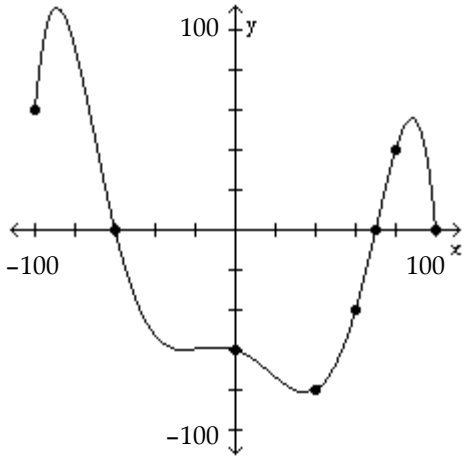
Objective: (2.2) Obtain Information from or about the Graph of a Function

50) For what numbers x is f(x) = 0? **50)** _____



Objective: (2.2) Obtain Information from or about the Graph of a Function

51) For what numbers x is f(x) > 0? **51)** _____



Objective: (2.2) Obtain Information from or about the Graph of a Function

Answer the question about the given function.

52) Given the function $f(x) = 3x^2 + 6x + 3$, if $x = -1$, what is f(x)? What point is on the graph of f? **52)** _____

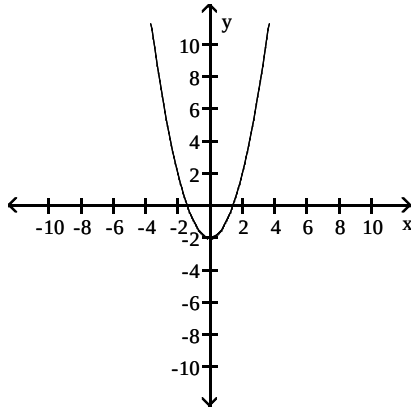
Objective: (2.2) Obtain Information from or about the Graph of a Function

53) Given the function $f(x) = \frac{x^2 + 9}{x - 2}$, list the y–intercept, if there is one, of the graph of f. **53)** _____

Objective: (2.2) Obtain Information from or about the Graph of a Function

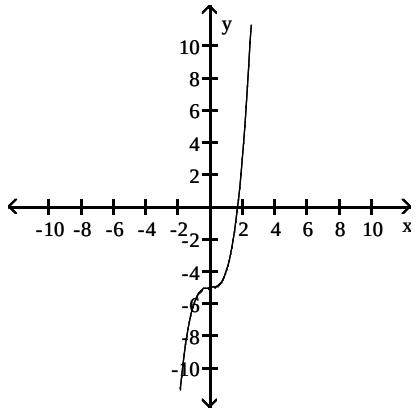
The graph of a function is given. Decide whether it is even, odd, or neither.

54) **54)** _____

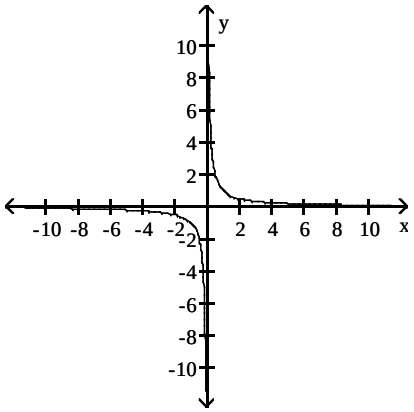


Objective: (2.3) Determine Even and Odd Functions from a Graph

55) **55)** _____



Objective: (2.3) Determine Even and Odd Functions from a Graph

56) 

56) _____

Objective: (2.3) Determine Even and Odd Functions from a Graph

Determine algebraically whether the function is even, odd, or neither.

57) $f(x) = \sqrt[3]{x}$ **57)** _____

Objective: (2.3) Identify Even and Odd Functions from the Equation

58) $\sqrt[3]{2x^2 + 3}$ **58)** _____

Objective: (2.3) Identify Even and Odd Functions from the Equation

59) $f(x) = \dfrac{x}{x^2 + 4}$ **59)** _____

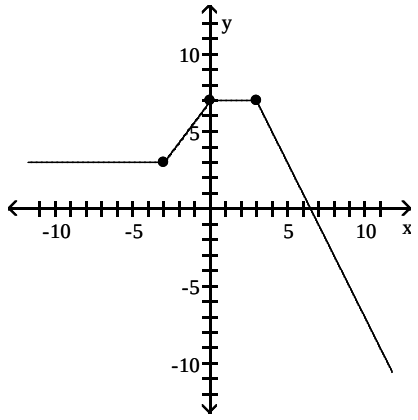
Objective: (2.3) Identify Even and Odd Functions from the Equation

60) $f(x) = \dfrac{-4x}{|x|}$ **60)** _____

Objective: (2.3) Identify Even and Odd Functions from the Equation

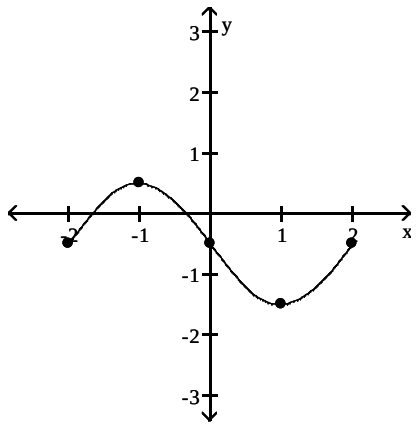
The graph of a function is given. Determine whether the function is increasing, decreasing, or constant on the given interval.

61) (3, ∞) **61)** _____



Objective: (2.3) Use a Graph to Determine Where a Function Is Increasing, Decreasing, or Constant

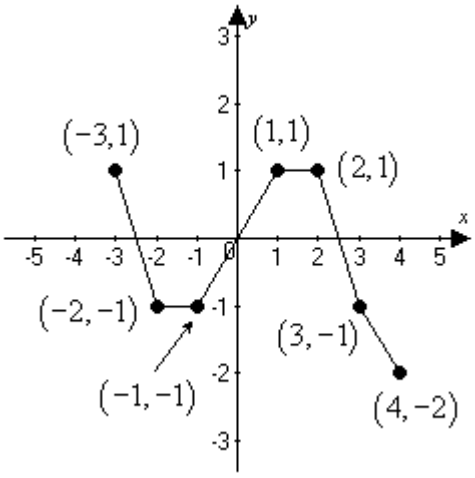
62) (1, 2) **62)** _____



Objective: (2.3) Use a Graph to Determine Where a Function Is Increasing, Decreasing, or Constant

Use the graph to find the intervals on which it is increasing, decreasing, or constant.

63) **63)** _____



Objective: (2.3) Use a Graph to Determine Where a Function Is Increasing, Decreasing, or Constant

For the function, find the average rate of change of f from 1 to x:

$\frac{f(x) - f(1)}{x - 1}$, $x \neq 1$

64) $f(x) = x^2 - 2x$ **64)** _____

Objective: (2.3) Find the Average Rate of Change of a Function

65) $f(x) = \frac{6}{x + 5}$ **65)** _____

Objective: (2.3) Find the Average Rate of Change of a Function

Find the average rate of change for the function between the given values.

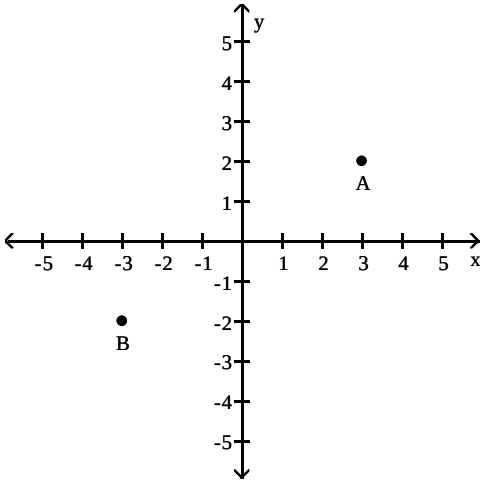
66) $f(x) = x^2 + 7x$; from 1 to 5 **66)** _____

Objective: (2.3) Find the Average Rate of Change of a Function

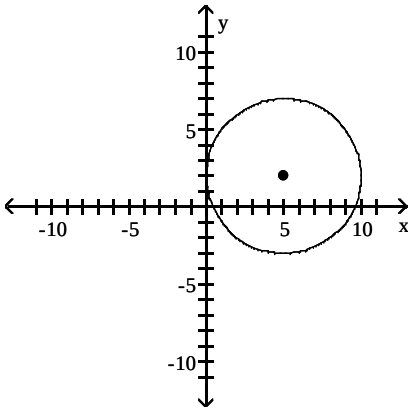
67) $f(x) = \sqrt{2x}$; from 2 to 8 **67)** _____

Objective: (2.3) Find the Average Rate of Change of a Function

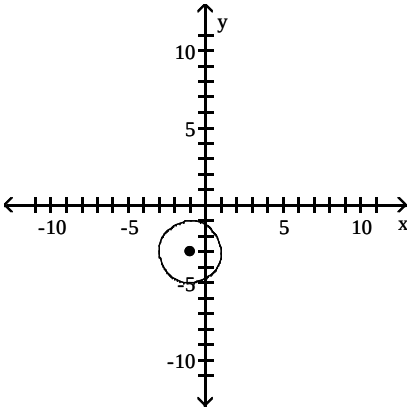
1) (–3, 0), (1, 0) (–5, 0), (0, –3)
2) (0, –1), (–1, 0), (0, 1)
3) (–3, 0), (0, 9), (3, 0)
4) (–1, 0), (0, –2), (0, 2), (1, 0)
5) (0, 0)
6) (–9, 0), (9, 0)
7)



8) intercepts: (–6, 0) and (6, 0)
symmetric with respect to x–axis, y–axis, and origin
9) intercept: (0, 7)
no symmetry
10) y–axis
11) $(x - 3)^2 + (y - 2)^2 = 25$
12) $(x - 2)^2 + (y + 3)^2 = 36$
13) (h, k) = (–10, 8); r = 9
14) (h, k) = (0, –10); r = 10
15) (h, k) = (–6, –2); $r = \sqrt{6}$
16) (h, k) = (5, 2); r = 5



17) (h, k) = (–1, –3); r = 2



18) (h, k) = (4, –8); r = 3
19) $x^2 + y^2 - 4x + 6y + 4 = 0$
20) $x^2 + (y - 214)^2 = 40{,}000$
21) not a function
22) function
domain: {Alice, Brad, Carl}
range: {cat, dog}
23) not a function
24) function
25) not a function
26) not a function
27) function
28) $\frac{7}{4}$
29) $-3x^2 - 4x - 5$
30) $4x^2 - 11x + 10$
31) $2x^2 + 4xh + 2h^2 + 4x + 4h + 4$
32) A = 204
33) 4.29 sec
34) $\{x \mid x \neq -5, 5\}$
35) $\{x \mid x \leq 13\}$
36) $\{x \mid x > 6\}$
37) (f + g)(x) = –16x + 18; all real numbers
38) (f • g)(x) = $63x^2 - 99x + 36$; all real numbers
39) $\left(\frac{f}{g}\right)(x) = \frac{\sqrt{x}}{4x - 9}$; $\left\{x \mid x \geq 0, x \neq \frac{9}{4}\right\}$
40) $(f \cdot g)(x) = \frac{4\sqrt{x + 11}}{x}$; $\{x \mid x \geq -11, x \neq 0\}$
41) –36
42) $\frac{3}{4}$
43) 8
44) 3(2x+h)
45) G(x) = 10x
46) G(x) = 30x + 370

47) not a function
48) function
domain: all real numbers
range: $\{y \mid y \le 9\}$
intercepts: (–4, 0), (0, 8), (2, 0)
symmetry: none
49) positive
50) –6, 7, 10
51) [–100, –60), (70, 100)
52) 0; (–1, 0)
53) $(0, -\frac{9}{2})$
54) even
55) neither
56) odd
57) odd
58) even
59) odd
60) odd
61) decreasing
62) increasing
63) Decreasing on (–3, –2) and (2, 4); increasing on (–1, 1);
constant on (–2, –1) and (1, 2)
64) x – 1
65) $-\frac{1}{x+5}$
66) 13
67) $\frac{1}{3}$