Basics of Functions and Their Graphs

1. Determine whether each relation is a function.

$$\{(3,5),(4,7),(9,9)\}$$

2. Determine whether each relation is a function.

$$\{(5,3),(5,4),(6,3),(6,4)\}$$

3. Determine whether each relation is a function.

$$\{(2,1),(3,1),(4,1)\}$$

4. Determine whether each equation defines y as a function of x:

$$x + 3y = 4$$

5. Determine whether each equation defines y as a function of x:

$$x^2 + 5y = 3$$

6. Determine whether each equation defines y as a function of x:

$$x^2 + y^2 = 16$$

7. Determine whether each equation defines y as a function of x:

$$5x = y^2$$

8. Determine whether each equation defines y as a function of x:

$$y = -\sqrt{x-2}$$

9. Determine whether each equation defines y as a function of x:

$$5x + y^3 = 2$$

10. Determine whether each equation defines y as a function of x:

$$xy - 3y = 2$$

11. Determine whether each equation defines y as a function of x:

$$|x| + y = 3$$

12. Evaluate each function at the given values of the independent variable and simplify:
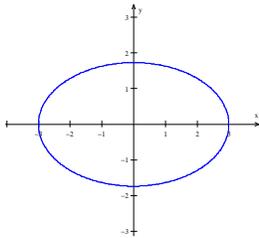
$$g(x) = x^2 - 5x - 2$$
$$a)\,g(-3) \quad b)\,g(x+4) \quad c)\,g(-x)$$

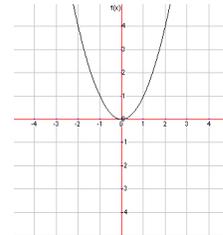13. Evaluate each function at the given values of the independent variable and simplify:
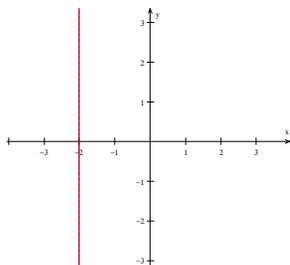
$$f(x) = \frac{x}{|x|}$$
$$f(r^2)$$

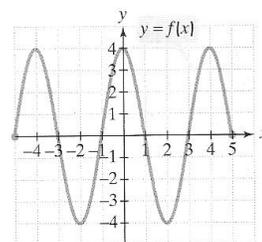14. Use the vertical line test to identify graphs in which y is a function of x:

15. Use the vertical line test to identify graphs in which y is a function of x:

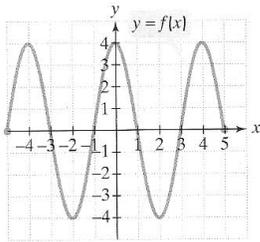16. Use the vertical line test to identify graphs in which y is a function of x:

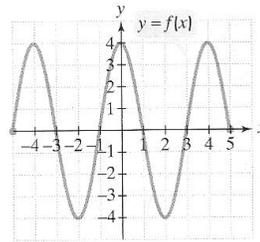17. Use the graph of f to find each indicated function value:

f(0)

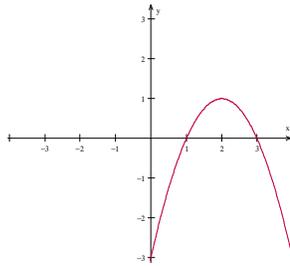18. Use the graph of f to find each indicated function value:

$y = f(x)$

f(1)

19. Use the graph of f to find each indicated function value:

$y = f(x)$

f(2)

20. Use the graph to determine a. the function's domain, b. the function's range, c. the x-intercepts, d. the y-intercept, if any

21. Use the graph to determine a. the function's domain, b. the function's range, c. the x-intercepts, d. the y-intercept, if any