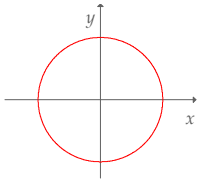
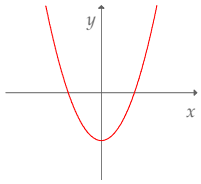
Exercise Set 2.7: Functions and Graphs

Determine whether or not each of the following graphs represents a function.

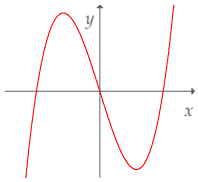
1.



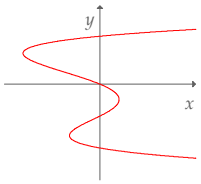
2.



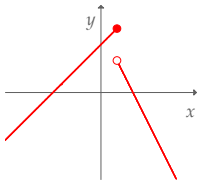
3.



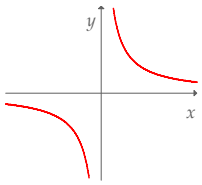
4.



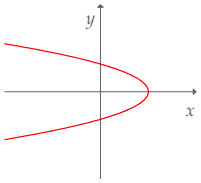
5.



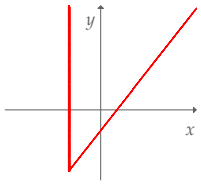
6.



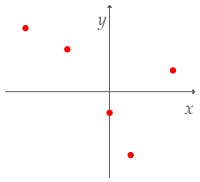
7.



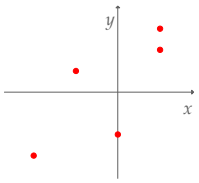
8.



9.



10.



For each set of points,

(a) Graph the set of points.

(b) Determine whether or not the set of points represents a function. Justify your answer.

11. $\{(1,5),\ (2,4),\ (-3,4),\ (2,-1),\ (3,6)\}$

12. $\{(-3,2),\ (1,2),\ (0,-3),\ (2,1),\ (-2,1)\}$

13. $\{(2,0),\ (4,-1),\ (6,0),\ (3,-1),\ (5,2)\}$

14. $\{(-1,-4),\ (-2,3),\ (4,1),\ (4,2),\ (-2,-3)\}$

Answer the following.

15. Analyze the coordinates in each of the sets above. Describe a method of determining whether or not the set of points represents a function without graphing the points.

16. Determine whether or not each set of points represents a function without graphing the points. Justify each answer.

(a) $\{(-7,3),\ (3,-7),\ (1,5),\ (5,1),\ (-2,1)\}$

(b) $\{(6,3),\ (-4,3),\ (2,3),\ (-3,3),\ (5,3)\}$

(c) $\{(3,6),\ (3,-4),\ (3,2),\ (3,-3),\ (3,5)\}$

(d) $\{(-2,-5),\ (-5,2),\ (2,5),\ (5,-2),\ (5,2)\}$

Exercise Set 2.7: Functions and Graphs

Answer the following.

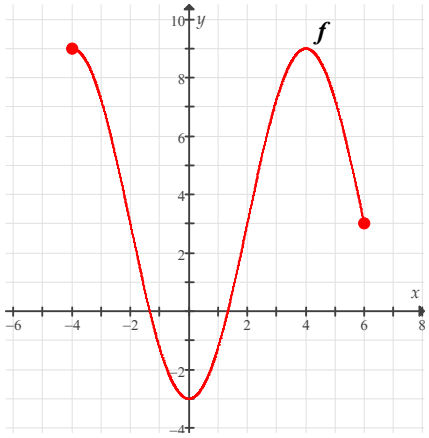
17. The graph of $y = f(x)$ is shown below.

(a) Find the domain of the function. Write your answer in interval notation.

(b) Find the range of the function. Write your answer in interval notation.

(c) Find the following function values:
$f(-2);\ f(0);\ f(4);\ f(6)$

(d) For what value(s) of x is $f(x) = 9$?



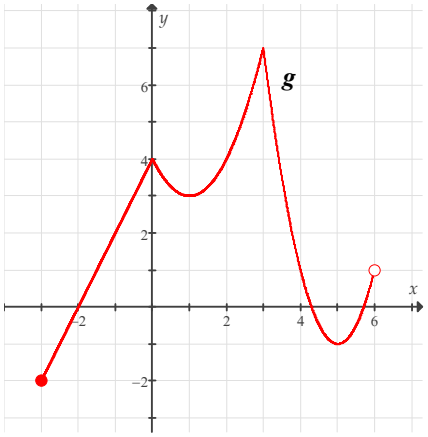
18. The graph of $y = g(x)$ is shown below.

(a) Find the domain of the function. Write your answer in interval notation.

(b) Find the range of the function. Write your answer in interval notation.

(c) Find the following function values:
$g(-2);\ g(0);\ g(1);\ g(3);\ g(6)$

(d) For what value(s) of x is $g(x) = -2$?



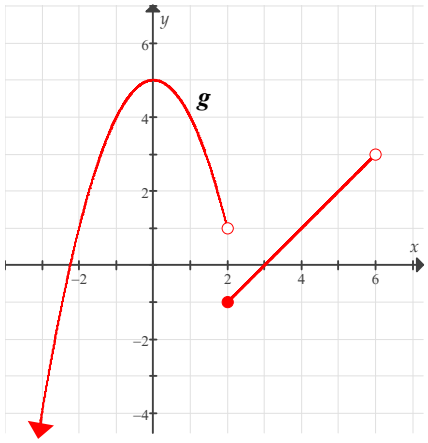
19. The graph of $y = g(x)$ is shown below.

(a) Find the domain of the function. Write your answer in interval notation.

(b) Find the range of the function. Write your answer in interval notation.

(c) Find the following function values:
$g(-2);\ g(0);\ g(2);\ g(4);\ g(6)$

(d) Which is greater, $g(-2)$ or $g(3)$?



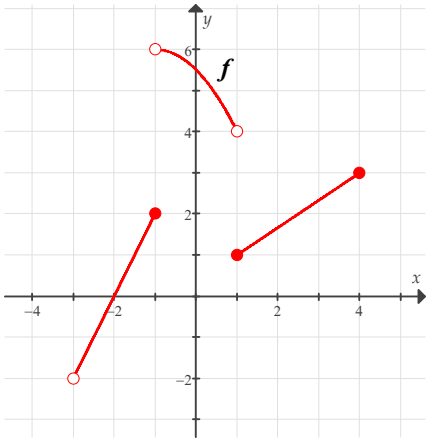
20. The graph of $y = f(x)$ is shown below.

(a) Find the domain of the function. Write your answer in interval notation.

(b) Find the range of the function. Write your answer in interval notation.

(c) Find the following function values:
$f(-3);\ f(-2);\ f(-1);\ f(1);\ f(4)$

(d) Which is smaller, $f(0)$ or $f(3)$?



Exercise Set 2.7: Functions and Graphs

For each of the following functions:

(a) State the domain of the function. Write your answer in interval notation.

(b) Choose *x*-values corresponding to the domain of the function, calculate the corresponding *y*-values, plot the points, and draw the graph of the function.

21. $f(x) = -\frac{3}{2}x + 6$

22. $f(x) = \frac{2}{3}x - 4$

23. $h(x) = 3x - 5,\ -1 \le x < 3$

24. $h(x) = -2x,\ -3 < x \le 2$

25. $g(x) = |x - 3|$

26. $g(x) = |x| - 4$

27. $f(x) = \sqrt{x - 3}$

28. $f(x) = \sqrt{5 - x}$

29. $F(x) = x^2 - 4x$

30. $G(x) = (x - 3)^2 + 1$

For each of the following equations,

(a) Solve for *y*.

(b) Determine whether the equation defines *y* as a function of *x*. (Do not graph.)

31. $3y - 5x = 8$

32. $2x - 9 = 6y + 2$

33. $2y + 3x^2 = 7$

34. $y^2 - 1 = 5x$

35. $x + 3 = y^2$

36. $x^2 + y = 3$

37. $|y| - 2 = x$

38. $|x| + 3y = 4$

39. $2y - 5|x| - 7 = 0$

40. $-3x + 4|y| + 8 = 0$