

Section 5.1

Exercises

Determine if each relation is a function:

- $\{(2,3), (1,5), (6,-3), (4,3), (-1,4)\}$
- $\{(-4,2), (3,7), (-3,-1), (-4,5), (-1,9)\}$
- $\{(8,5), (-1,5), (12,5), (0,5), (6,5)\}$
- $\{(3,2), (-3,-2), (-2,3), (2,-3)\}$

Write each of the following inequalities using interval notation.

- $x > 3$
- $x \geq 5$
- $x \leq -2$
- $x < 7$
- $3 < x \leq 5$
- $-7 \leq x \leq 2$
- $x \neq 4$
- $x \neq -1$

Suppose $f(x) = 2x + 3$ and $g(x) = x^2 - 4$.

Find each of the following:

- $f(-2)$
- $g(3)$
- $f(0)$
- $f(12)$
- $g(-5)$
- $g(0)$
- $f(4) + g(2)$
- $f(-1) + g(-4)$

For each function listed, the set

$S = \left\{-4, -1, 0, \frac{2}{3}, 5, 12\right\}$ is the domain, find

the function value for each element in S and state the range.

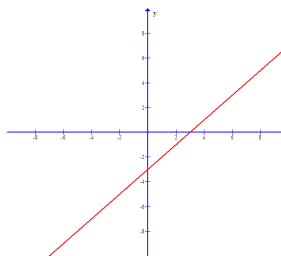
- $f(x) = x - 3$
- $f(x) = x^2 + 2$
- $f(x) = \frac{1}{x-1}$

Find the domain of each of the following functions. Write the domain first as an inequality, and then express it in interval notation.

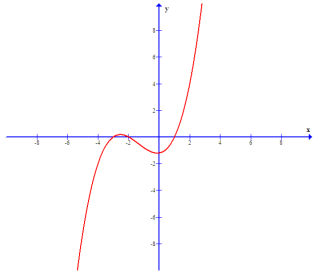
- $f(x) = \frac{3}{x}$
- $f(x) = \frac{-8}{x}$
- $f(x) = \frac{4}{x+5}$
- $f(x) = \frac{-2}{x-1}$
- $f(x) = \frac{x+5}{x+2}$
- $f(x) = \frac{x-1}{x+3}$
- $f(x) = \sqrt{x+4}$
- $f(x) = \sqrt{x-1}$
- $f(x) = \sqrt{5-x}$
- $f(x) = \sqrt{-x+2}$
- $f(x) = \sqrt{x} + 5$
- $f(x) = \sqrt{x} - 2$
- $f(x) = \frac{2}{\sqrt{x-1}}$
- $f(x) = \frac{-5}{\sqrt{x+8}}$

For each graph, determine if the relation that is graphed is a function. If it is a function, state the domain and the range.

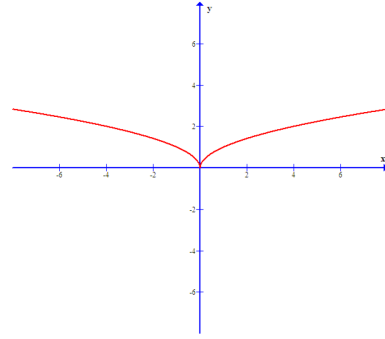
38.



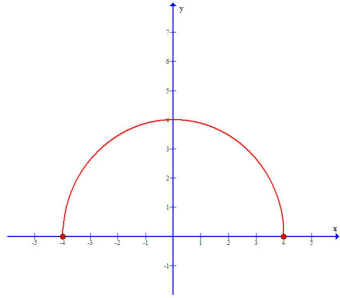
39.



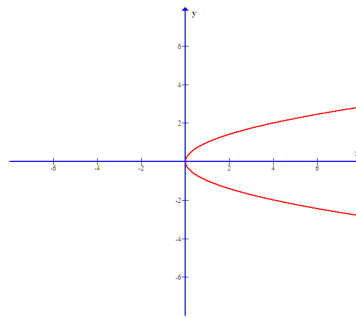
43.



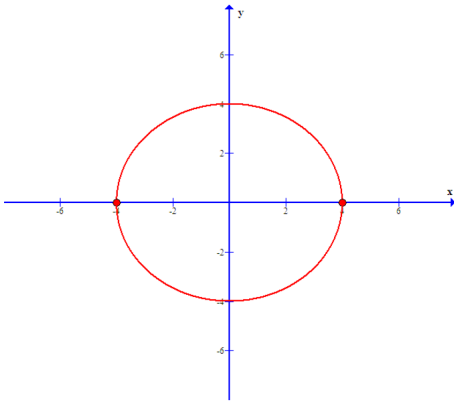
40.



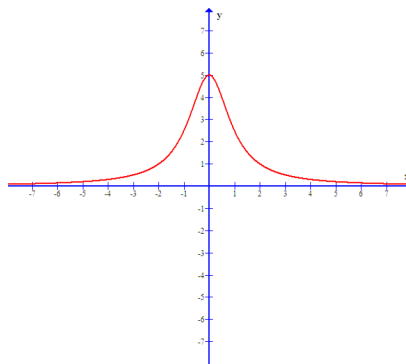
44.



41.



45.



42.

