

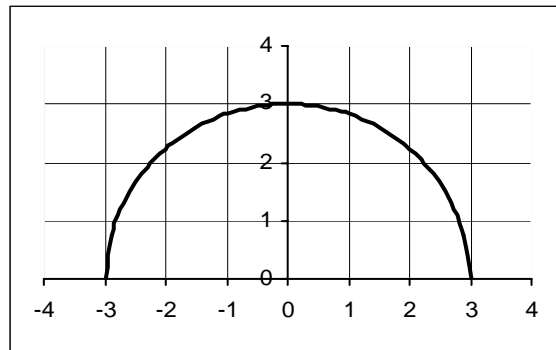
Relation: A relation is a correspondence between two sets.

Function: Let A and B be two sets. A function from set A (the **domain** of the function) into set B (the **range** of the function) is a relation that associates with each element of A one and only one element in set B. An element in set A is called the **independent variable**; the corresponding element in set B is called the **dependent variable**.

For a function in the form $y = f(x)$, the **domain** is the set of all x-values (inputs) of the independent variable for which the function is defined. Graphically, the domain consists of the leftmost x-values to the rightmost x-values.

The **range** is the set of all y-values (outputs) assumed by the dependent variable; set of all function values. Graphically, the range consists of the lowest y-values to the highest y-values.

1. The graph of the function $y = f(x) = \sqrt{9 - x^2}$ is shown. From the graph, determine the domain, range and intercepts of the function. Use interval notation when appropriate.



domain:

range:

x-intercept(s):

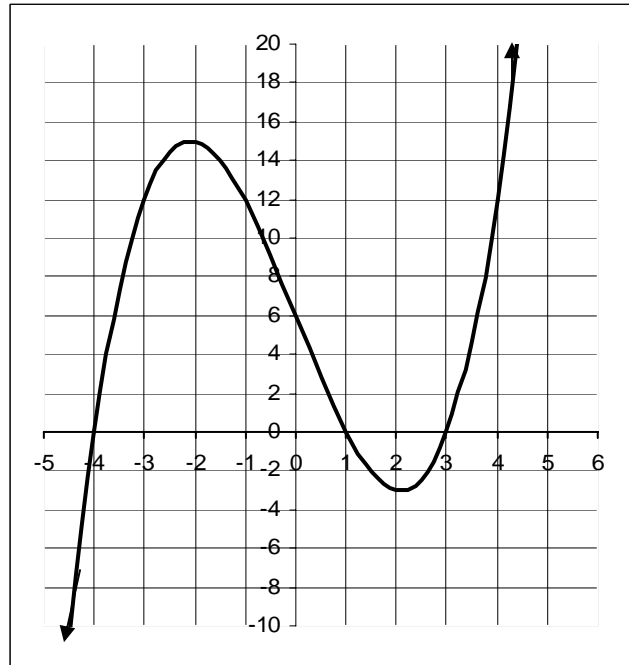
y-intercept(s):

Can the graph of a function have more than one y-intercept? Why or why not?

2. **Using function notation.** If $g(x) = x^2 - 5x + 1$, find and simplify

(a) $g(3)$	(b) $g(-2)$
(c) $g(-x)$	(d) $-g(x)$
(e) $g(x) + g(3)$	(f) $g(x+3)$
(g) $\frac{g(x+3) - g(x)}{3}$	

3. The graph of the function $y = f(x)$ is shown. Use this graph to answer each of the following.



(a) Find $f(-3)$ and $f(4)$.

(b) Is $f(2)$ positive or negative?

(c) Find $f(0)$. What is this number called?

(d) Find all x such that $f(x) = 0$. What are these x -values called?

(e) Approximate all x such that $f(x) = 2$.

(f) On what interval(s) is $f(x) < 0$? $f(x) > 0$?

4. Determine the domain of each of the following functions. Keep in mind that, if not stated otherwise, the domain of a function is the set of x -values for which the function is defined.

(a) $f(x) = \frac{5}{x-3}$

(b) $g(x) = x^2 + 5$

(c) $h(x) = \sqrt{8-2x}$

HW for Section 2.1:

- Read Section 2.1
- p. 96/ #1, 3, 9, 11, 15, 17, 21, 27, 35, 37, 41, 43, 47, 51, 53, 61, 63, 67, 69, 79, 81, 85, 87