

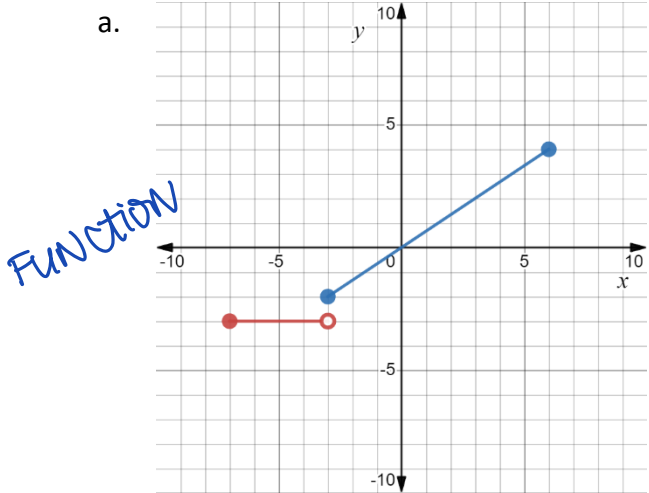
Name: _____

Date: _____

<p>Learning Goal 0.1</p>	<p>Expectations for graphing from previous years.</p>
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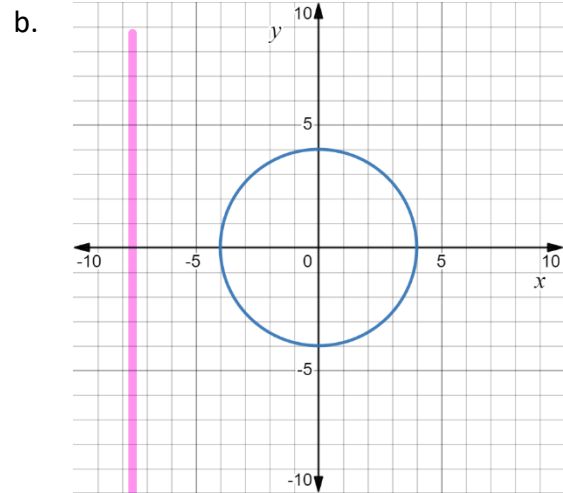
Let's start slowly!

Example Determine whether each of the following graphs represents a function. If so, state the domain and range of the function.



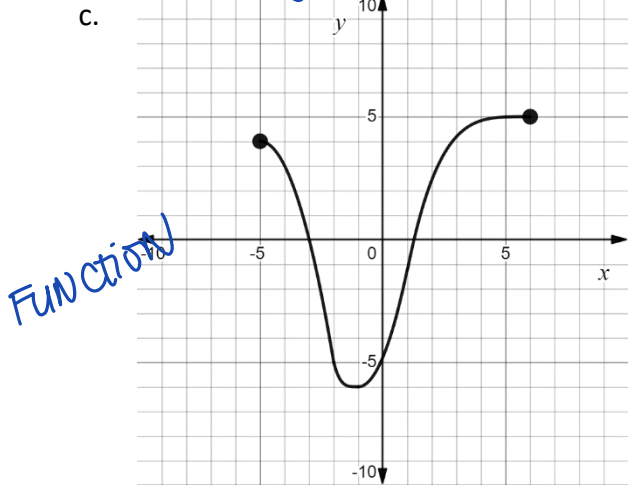
FUNCTION

Domain $\{x \mid -7 \leq x \leq 6, x \in \mathbb{R}\}$
 Range $\{y \mid y = -3, -2 \leq y \leq 4, y \in \mathbb{R}\}$



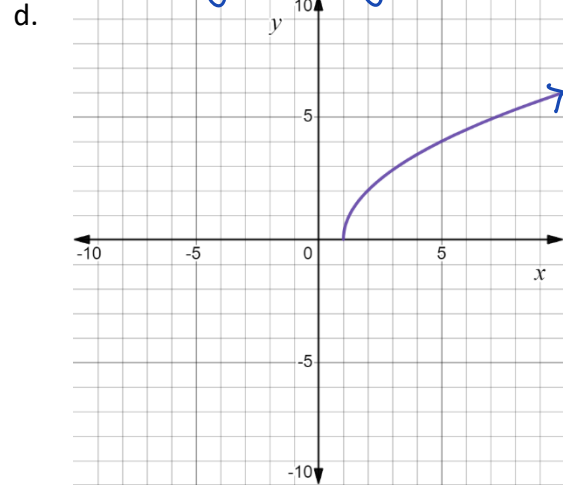
Not a FUNCTION

Domain $\{x \mid -4 \leq x \leq 4, x \in \mathbb{R}\}$
 Range $\{y \mid -4 \leq y \leq 4, y \in \mathbb{R}\}$



FUNCTION

Domain $\{x \mid -5 \leq x \leq 6, x \in \mathbb{R}\}$
 Range $\{y \mid -6 \leq y \leq 5, y \in \mathbb{R}\}$



FUNCTION

Domain $\{x \mid x \geq 1, x \in \mathbb{R}\}$
 Range $\{y \mid y \geq 0, y \in \mathbb{R}\}$

$$y = a(x-p)^2 + q$$

$$(x-p)^2 + (y-q)^2 = r^2$$

Example Determine whether each of the following equations represents a function. If so, state the domain and range of the function.

a. $y = 2x^2 + 5$ *parabola.*
 Domain $\{x | x \in \mathbb{R}\}$ *vertex (0, 5)*
 Range $\{y | y \geq 5, y \in \mathbb{R}\}$ **FUNCTION**

b. $x^2 + y^2 = 9$ *CIRCLE. centre (0,0) r = 3*
 Domain $\{x | -3 \leq x \leq 3, x \in \mathbb{R}\}$
 Range $\{y | -3 \leq y \leq 3, y \in \mathbb{R}\}$ **NOT a FUNCTION**

c. $x = |y|$ *ABSOLUTE VALUE.*
 Domain $\{x | x \geq 0, x \in \mathbb{R}\}$
 Range $\{y | y \in \mathbb{R}\}$ **NOT a FUNCTION**

d. $y = \frac{1}{x-3}$
 Domain $\{x | x \neq 3, x \in \mathbb{R}\}$
 Range $\{y | y \neq 0, y \in \mathbb{R}\}$ **FUNCTION.**

Example Consider the functions then evaluate.

$$f(x) = x^2 - 3$$

$$g(x) = \frac{x}{x+2}$$

a. *f of 2*
 $f(2) = (2)^2 - 3$
 $= 4 - 3$
 $= 1$

b. $g(-3) = \frac{(-3)}{(-3)+2} = \frac{-3}{-1} = 3$

c. $g(x-1) = \frac{(x-1)}{(x-1)+2} = \frac{(x-1+2)-2}{x+1}$
 $= \frac{x+1}{x+1} - \frac{2}{x+1} = 1 - \frac{2}{x+1}$

d. $f(x+4) = (x+4)^2 - 3$
 $= (x+4)(x+4) - 3$
 $= x^2 + 8x + 16 - 3$
 $= x^2 + 8x + 13$

Example Use the graph of $f(x)$ to determine the following.

a. $f(-2) = 1$
 $x = -2$

b. $f(x) = 2$
 $x = -1, 2$

c. the zeros of the function.
x-intercepts $x = -3, 3$
 $y = 0$

d. the maximum of $f(x)$ and the value of x for which that happens.
 $f(1) = 4$

