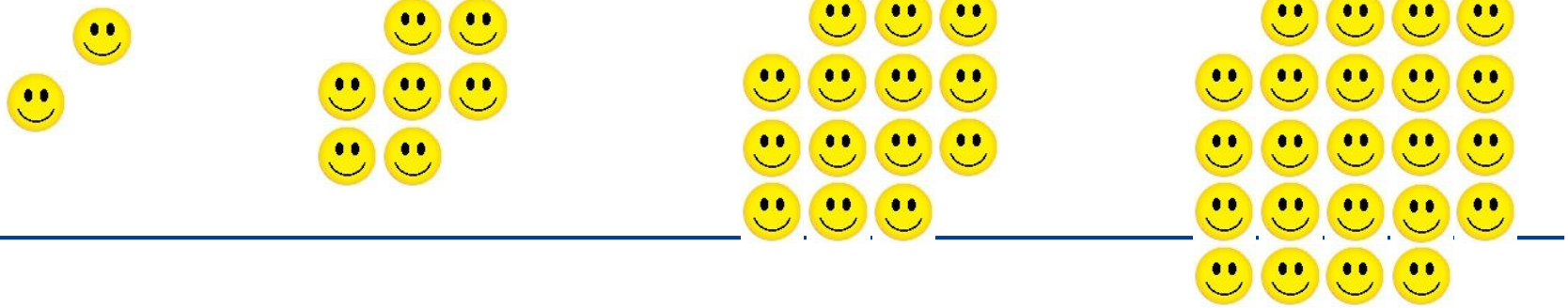
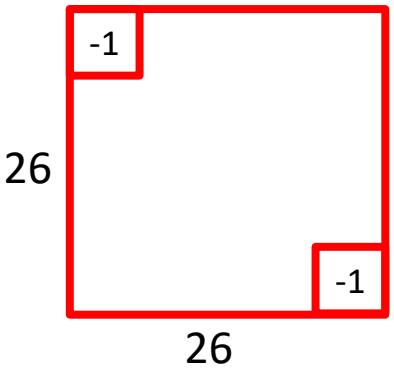
Warmup 9/(# of letters in "quattuordecillion")

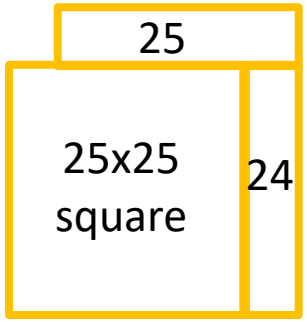
Created by Mr. Lischwe

1) **Make a "quick sketch" of step 25.**
2) **Calculate the number of units in step 25.**
3) **Write an equation for the pattern.**

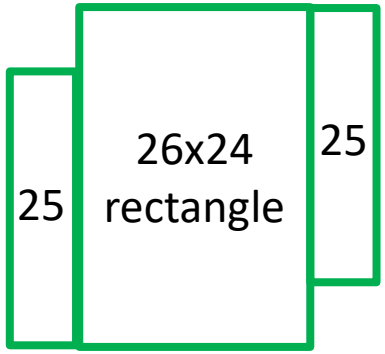




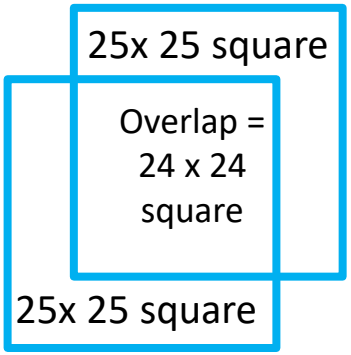
$$(n+1)^2 - 2$$



$$n^2 + n + (n-1)$$



$$(n+1)(n-1) + 2n$$



$$2n^2 - (n-1)^2$$

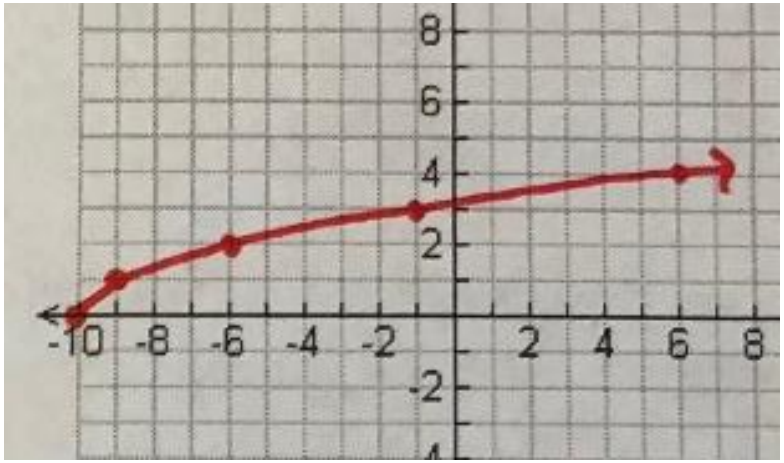
Check Homework

Add to your table of contents…

Table of Contents

$$h(x) = \sqrt{x + 10}$$

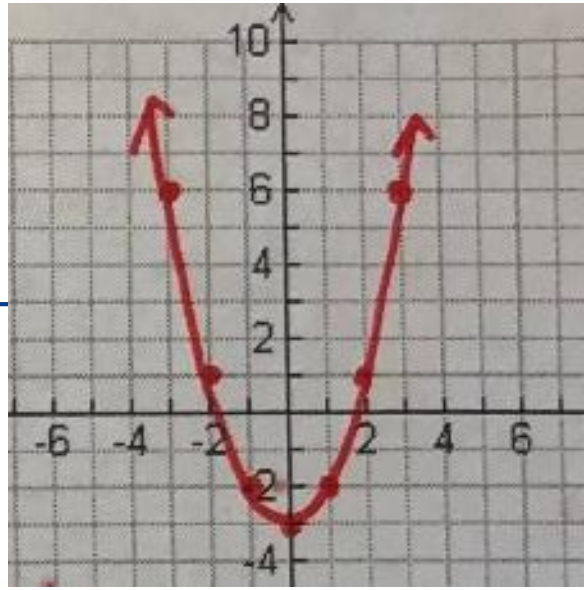
- **WHY doesn't this graph have an arrow on the left???**



- **In this equation, not all x-values are possible!**

- **Every function has a <u>domain:</u> the set of all possible x-values of that function.**

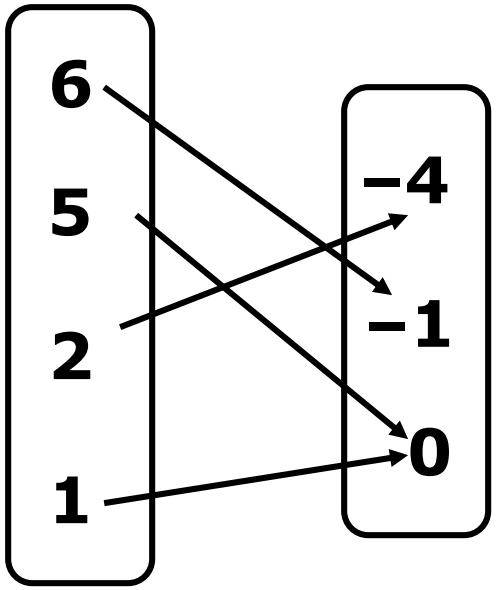
$$c(x) = x^2 - 3$$



- **Why doesn't this graph go below -3?**
- **For many functions, not all y-values are possible.**
- **The range of an equation/graph is all of the possible y-values you could get as outputs.**

The **domain** of a relation is the set of first coordinates (or *x*-values) of the ordered pairs. The **range** of a relation is the set of second coordinates (or *y*-values) of the ordered pairs.

Give the domain and range.



The domain values are all *x*-values 1, 2, 5 and 6.

The range values are *y*-values 0, –1 and –4.

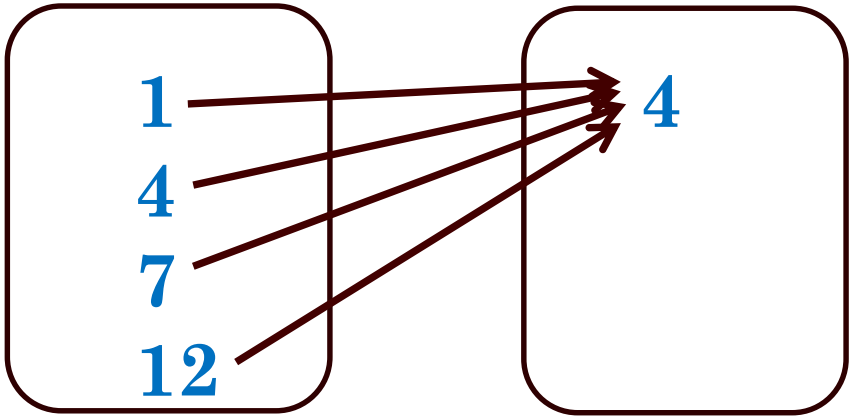
Domain: {1, 2, 5, 6}

Range: {–4, –1, 0}

Give the domain and range for each.

x	y
1	24
2	9
3	-6
4	-21
5	-36

Domain: {1, 2, 3, 4, 5}
Range: {-36, -21, -6, 9, 24}

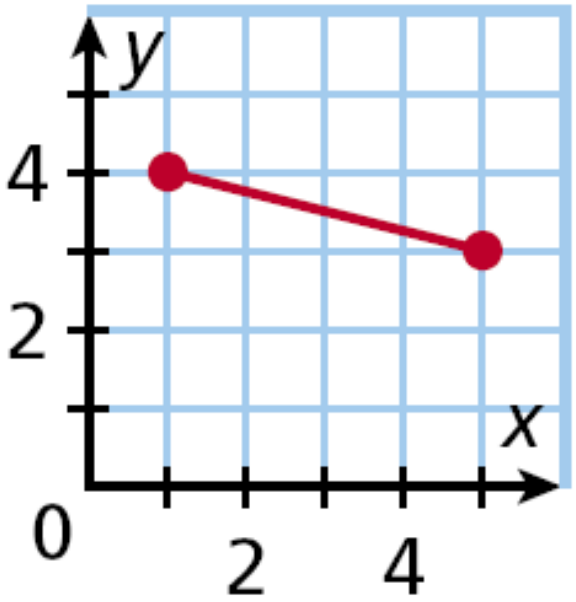


Domain: {1, 4, 7, 12}
Range: {4}

(1, 5); (8, 19); (4, 11); (-8, -13), (1, 5)

Domain: {-8, 1, 4, 8}
Range: {-13, 5, 11, 19}

What do you think the domain and range is here?

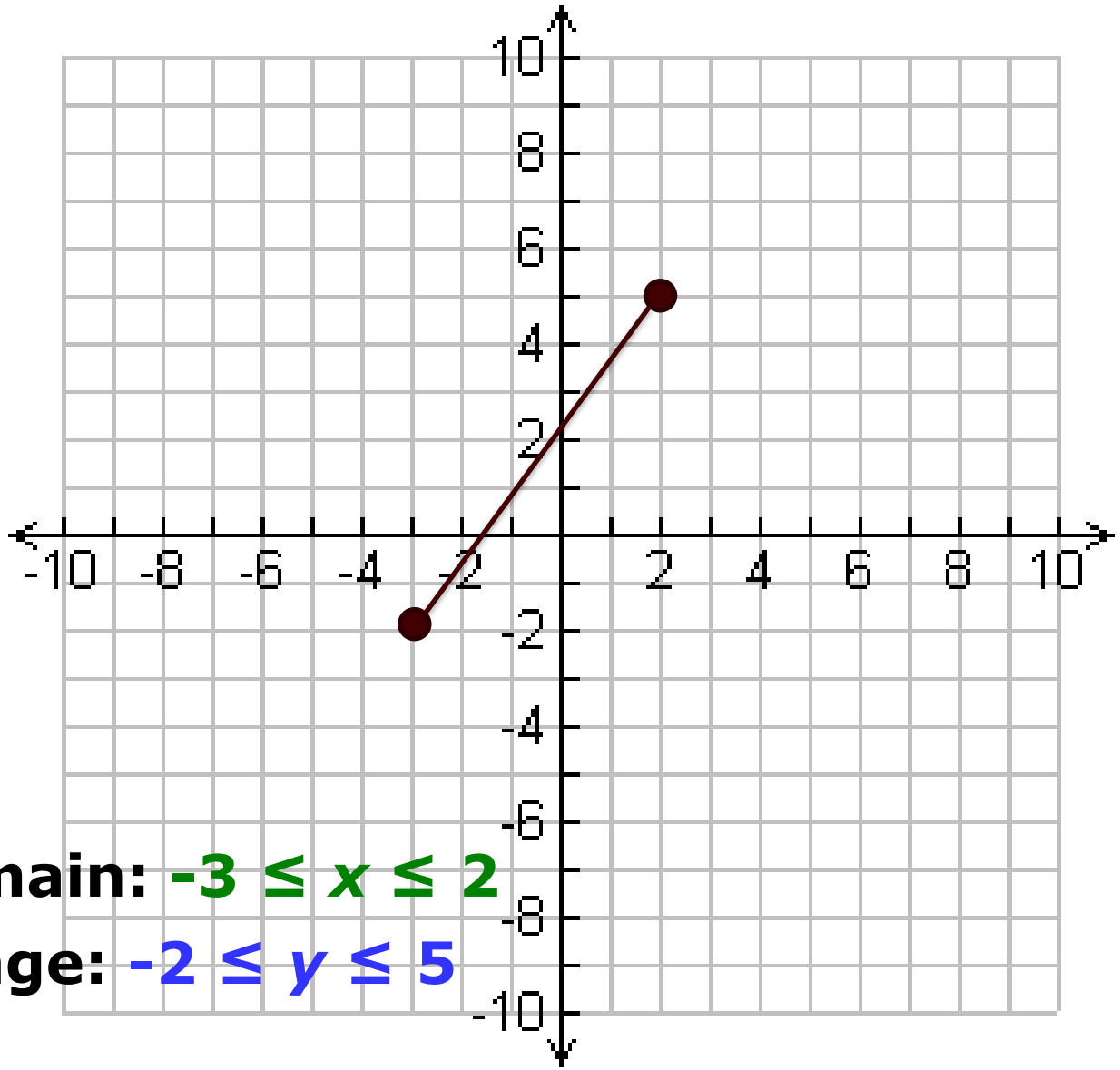


The domain value is all *x*-values from 1 through 5, inclusive.

The range value is all *y*-values from 3 through 4, inclusive.

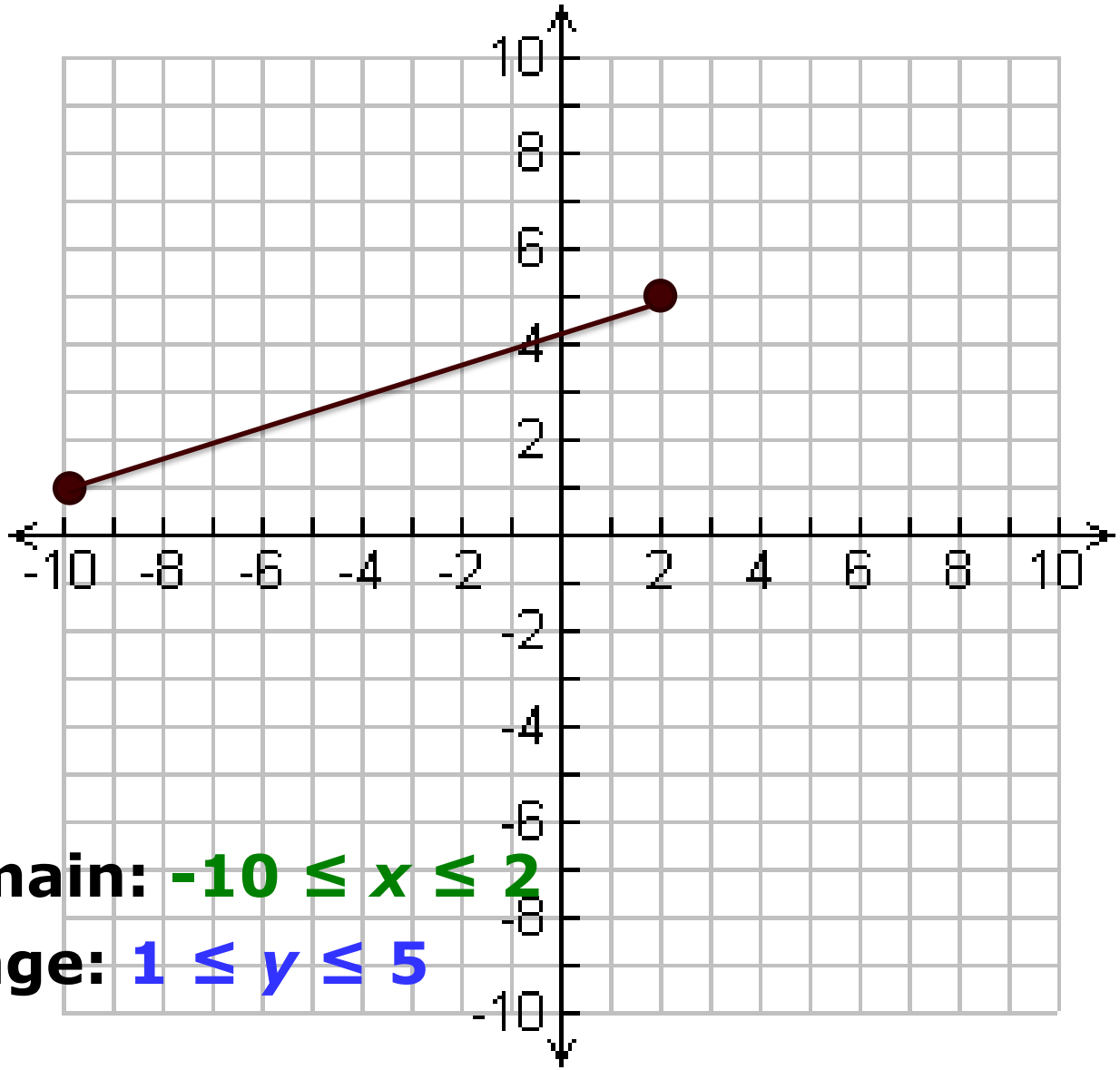
Domain: $1 \leq x \leq 5$

Range: $3 \leq y \leq 4$



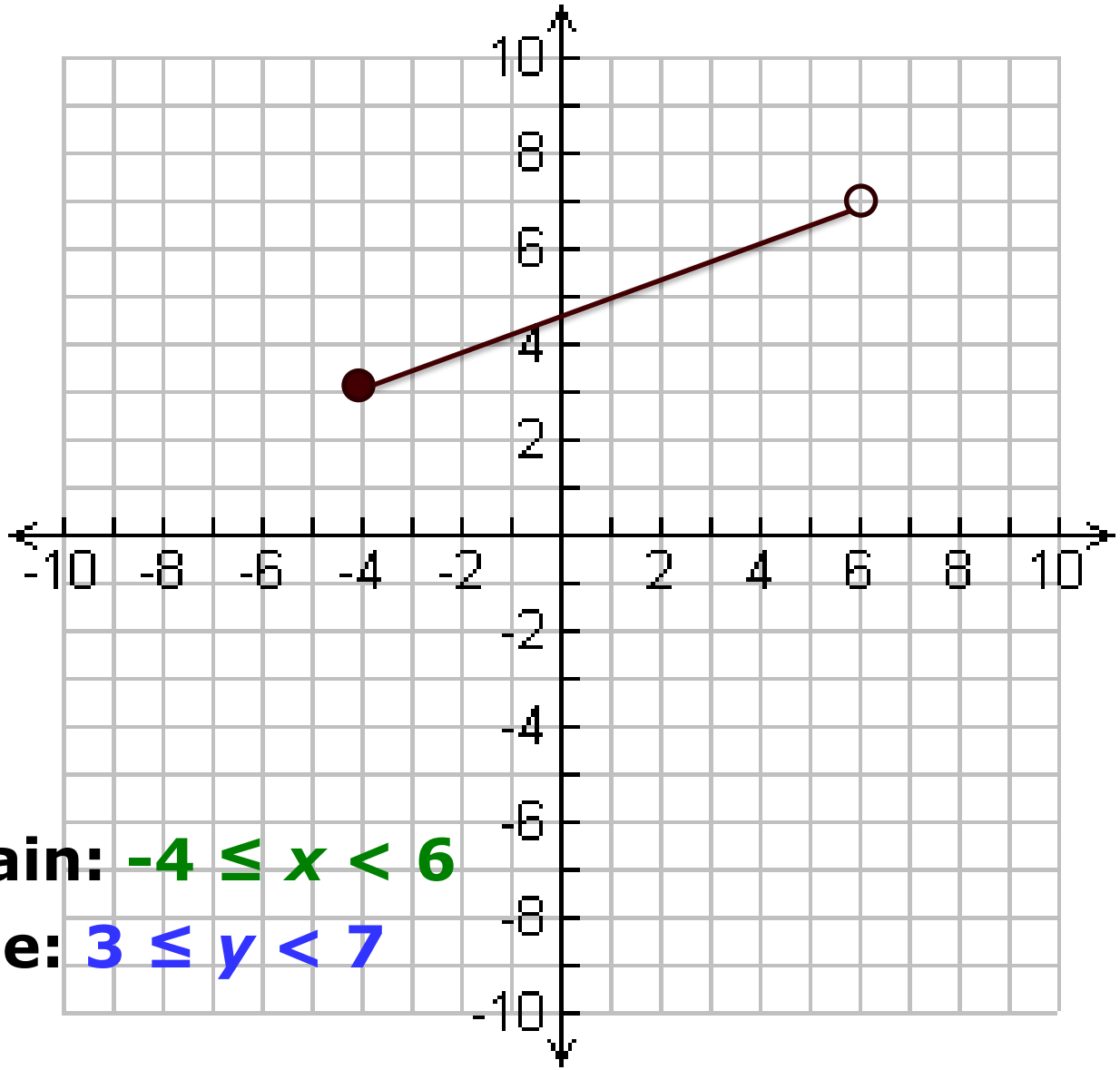
Domain: $-3 \leq x \leq 2$

Range: $-2 \leq y \leq 5$



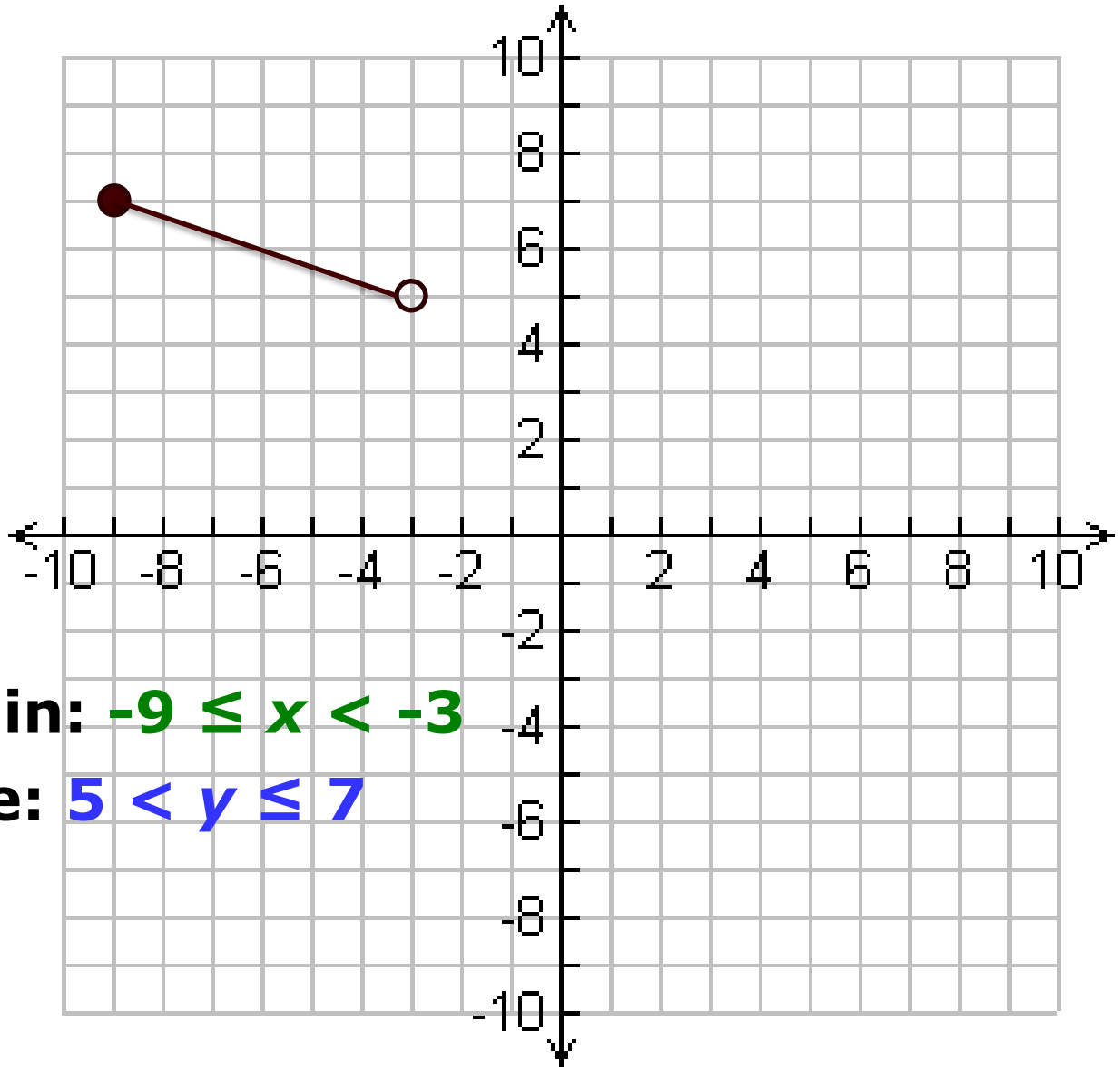
Domain: $-10 \leq x \leq 2$

Range: $1 \leq y \leq 5$



Domain: $-4 \leq x < 6$

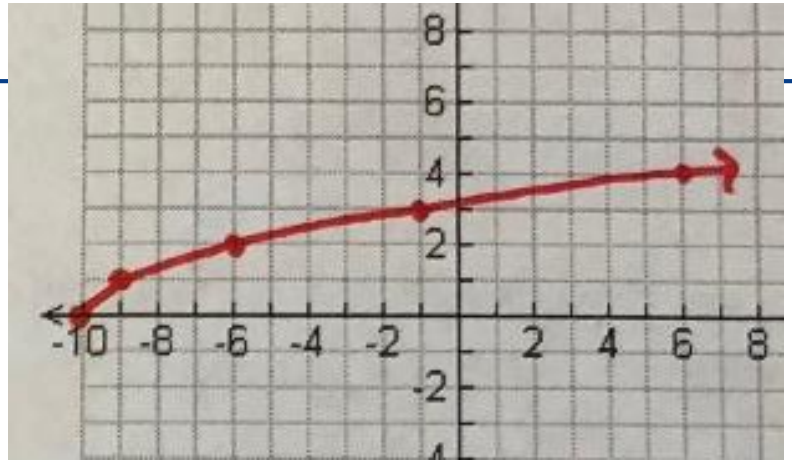
Range: $3 \leq y < 7$



Domain: $-9 \leq x < -3$

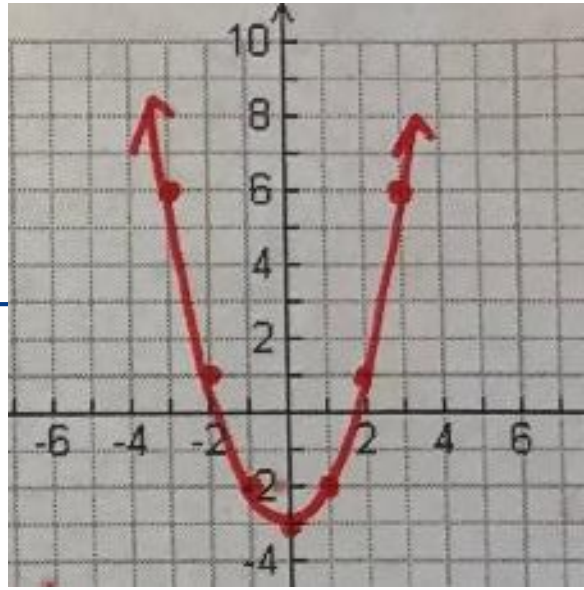
Range: $5 < y \leq 7$

$$h(x) = \sqrt{x + 10}$$



- **The square root of a negative is undefined.**
- **So in this equation, you could not get an answer for x-values less than -10.**
- **Domain for this graph:** $x \geq -10$

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

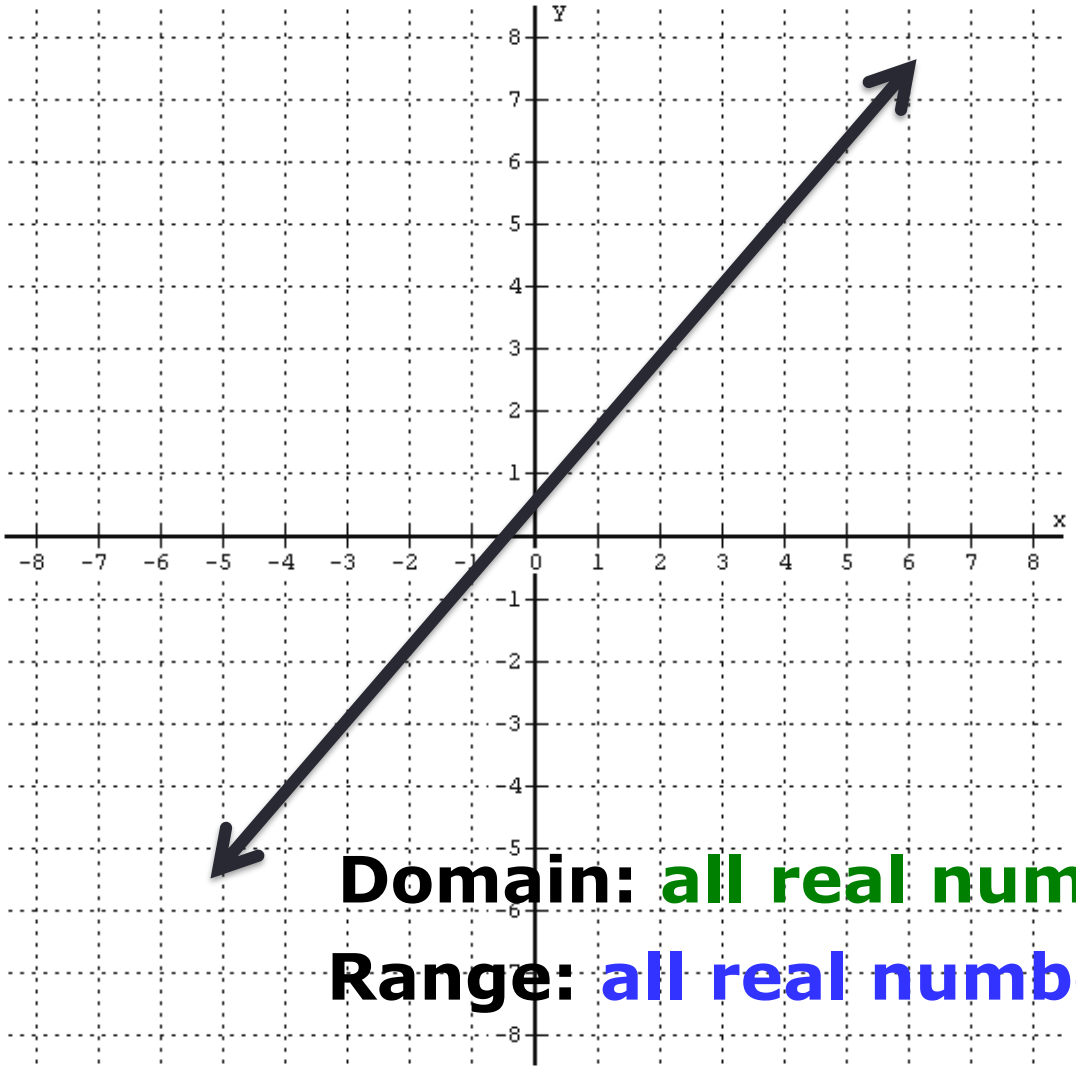


- **Domain???**
- **In this graph, the domain is all real numbers. The graph keeps going to the left and right. In the equation, you could plug in any number you want.**

- **HOWEVER, on this graph, it is impossible to get y-values less than -3.**

- **Domain for this graph:** $y \geq -3$

Domain & Range?

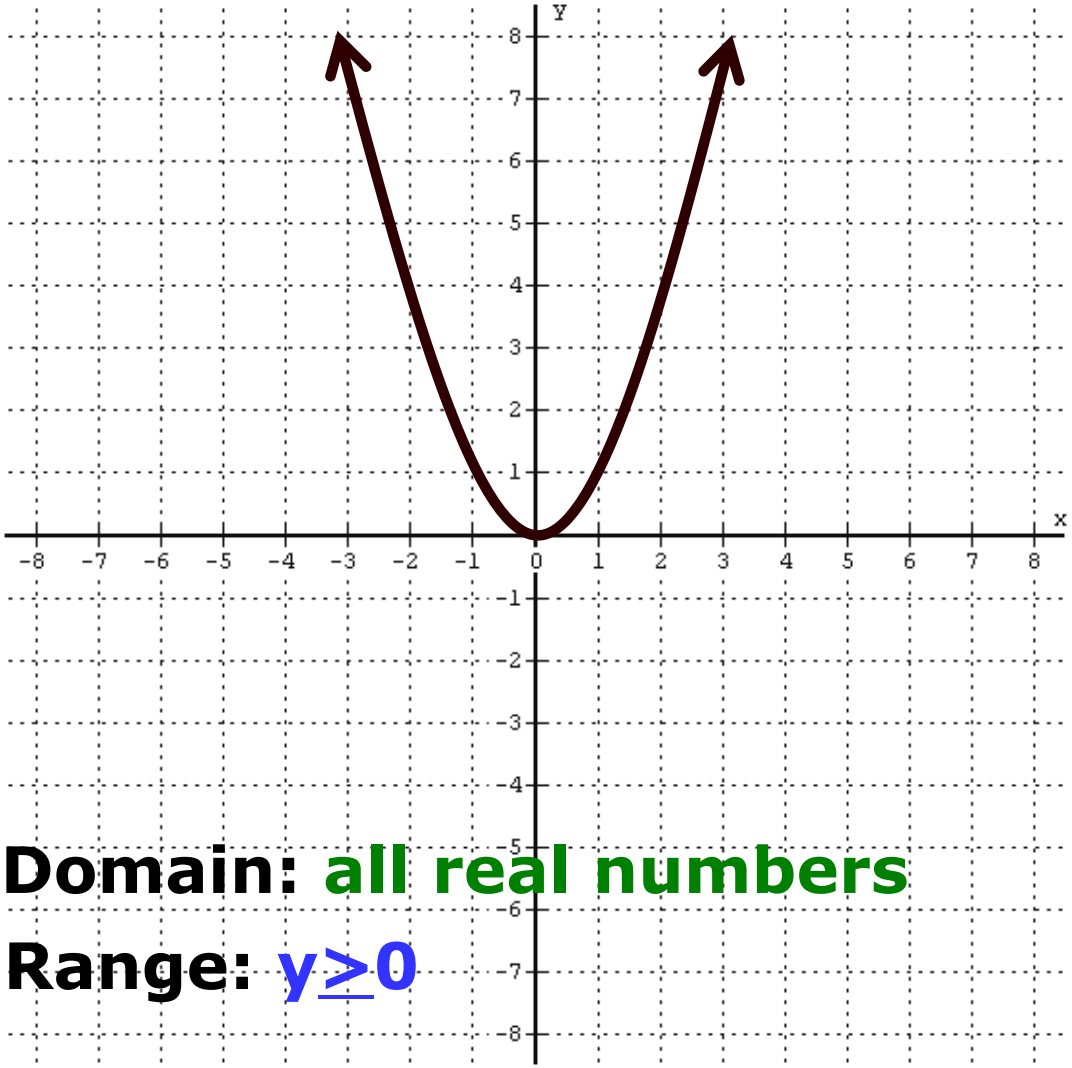


Why does the domain and range make sense given that the equation for this graph is y=x ?

Domain: all real numbers

Range: all real numbers

Domain & Range?



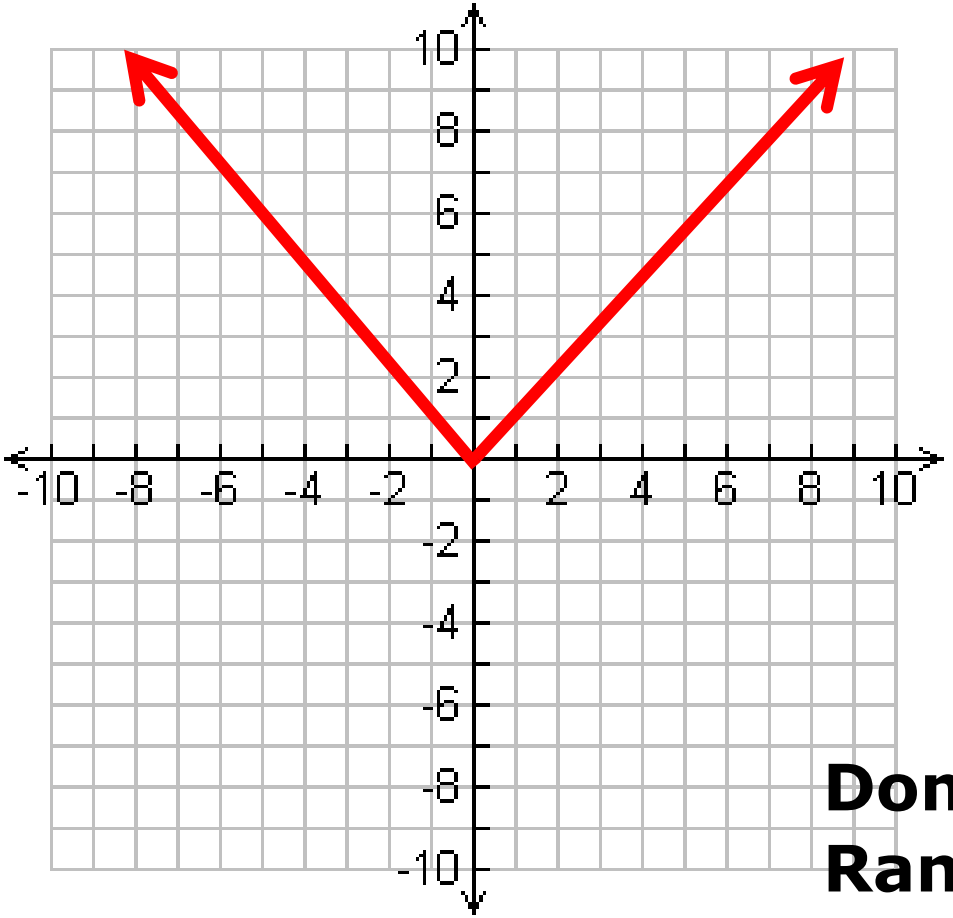
Domain: all real numbers

Range: $y \geq 0$

Why does the domain and range make sense given that the equation for this graph is $y=x^2$?

What do you think is the domain and range for $y = |x|$?

Domain & Range?

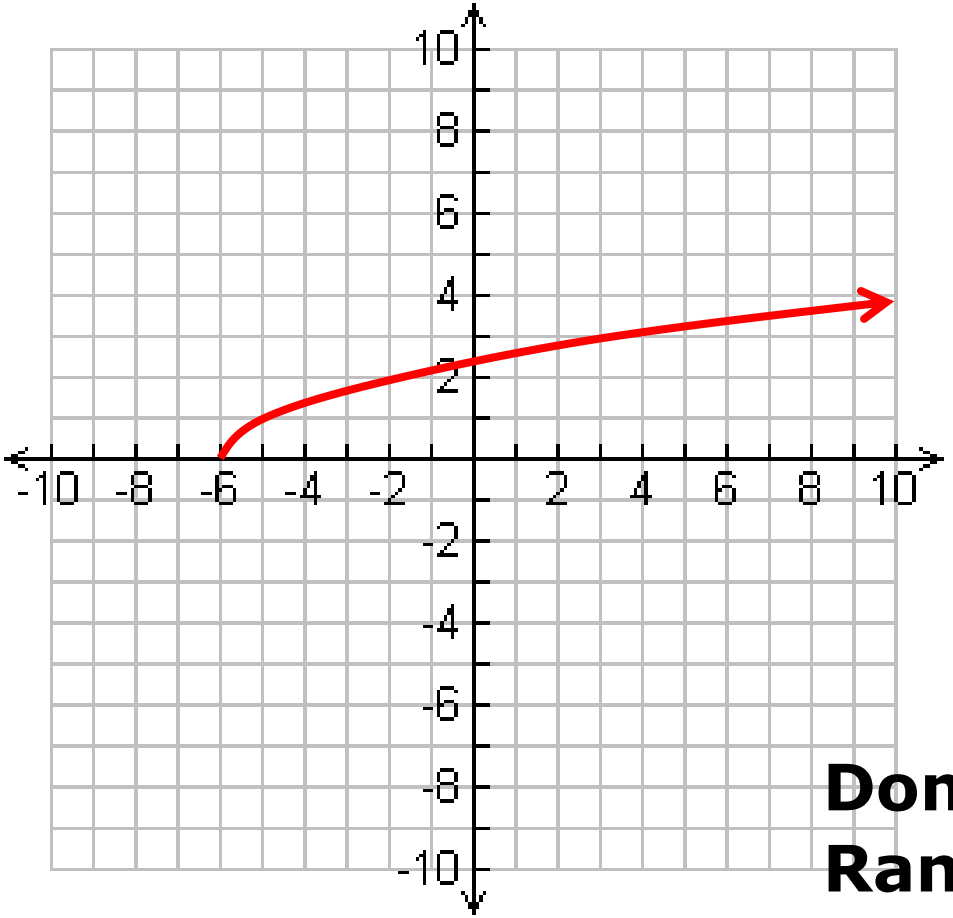


Why does the domain and range make sense given that the equation for this graph is y=|x| ?

Domain: all real numbers

Range: $y \geq 0$

Domain & Range?



$$y = \sqrt{x + 6}$$

Domain: x ≥ -6

Range: y≥0

Homework

- Worksheet