

Algebra 2 : Unit 3 Lesson 5

Domain and Range

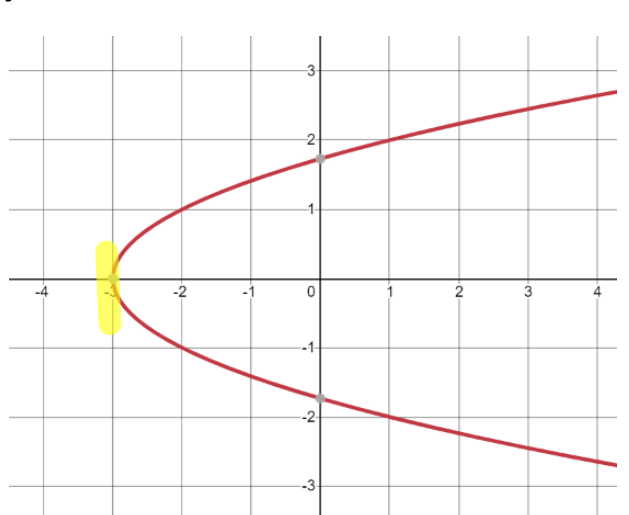
- Determine the domain and range of graphed functions

There are many different ways to think about domain and range. Today we will focus on identifying the domain and range of functions already graphed for us.

U3.5 Domain and Range

There are many different ways to think about domain and range. Today we will focus on identifying the domain and range of functions already graphed for us.

Domain: A set of all the **x-values** that your graph will cross. The set is listed in set notation, interval notation or given as an inequality.



How to find it: Imagine you are moving a vertical line across your graph. If your vertical line is touching the graph, then the x-value your line is on is part of the domain. If the vertical line is NOT touching your graph, that x-value is NOT part of your domain.

Writing your answer:

Interval Notation:

$$[-3, \infty)$$

Infinity

Read aloud as: "From -3 to infinity, including -3"

- Brackets are used when your graph **actually touches the number**. Parentheses are when your graph gets close to the number but does not touch it.

Inequality: $x \geq -3$

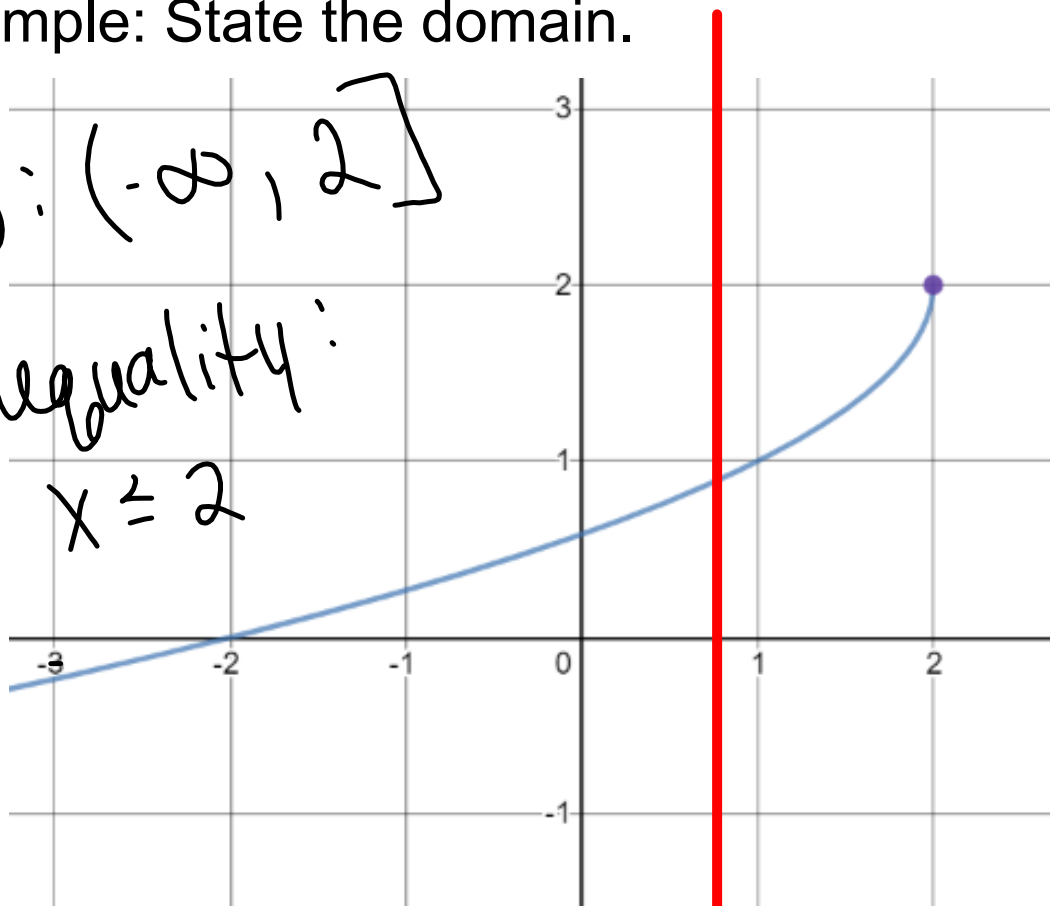
We use an "equal to" sign because the function does touch the x-value of -3.

Example: State the domain.

$$D: (-\infty, 2]$$

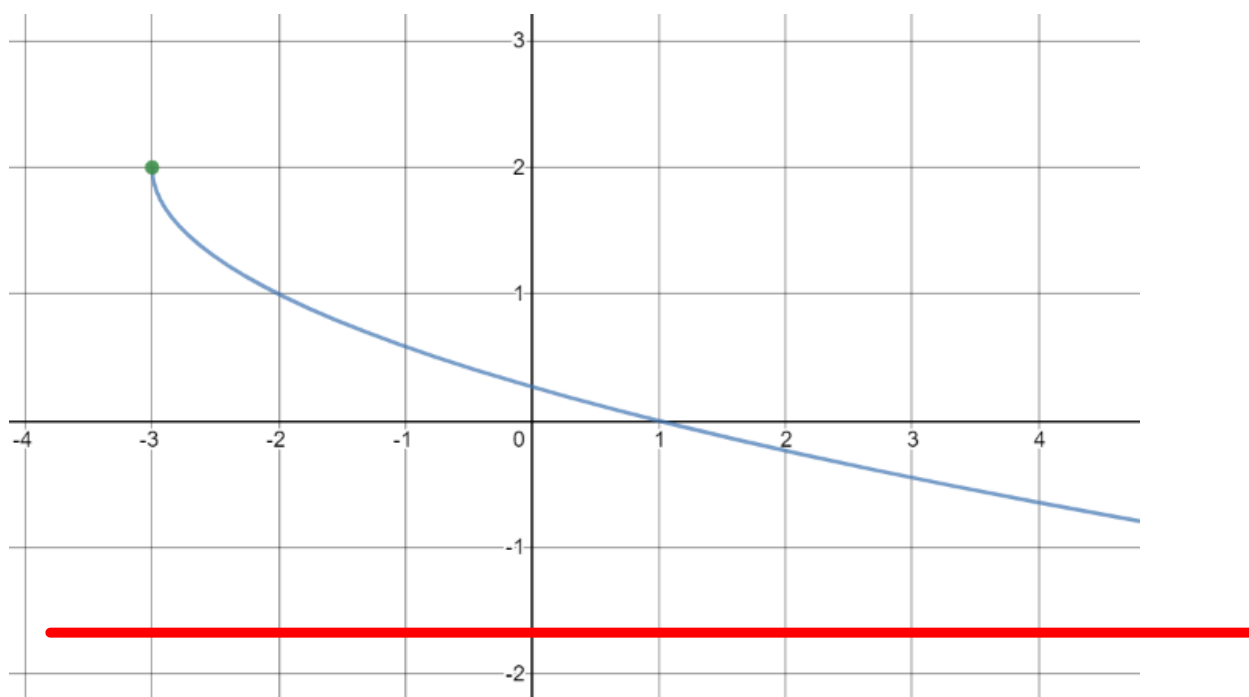
inequality:

$$x \leq 2$$



Range: The set of all **y-values** your graph will cross.

Instead of using a vertical line to think about what x-values your graph will cross, use a horizontal line to think about what y-values your graph will cross.



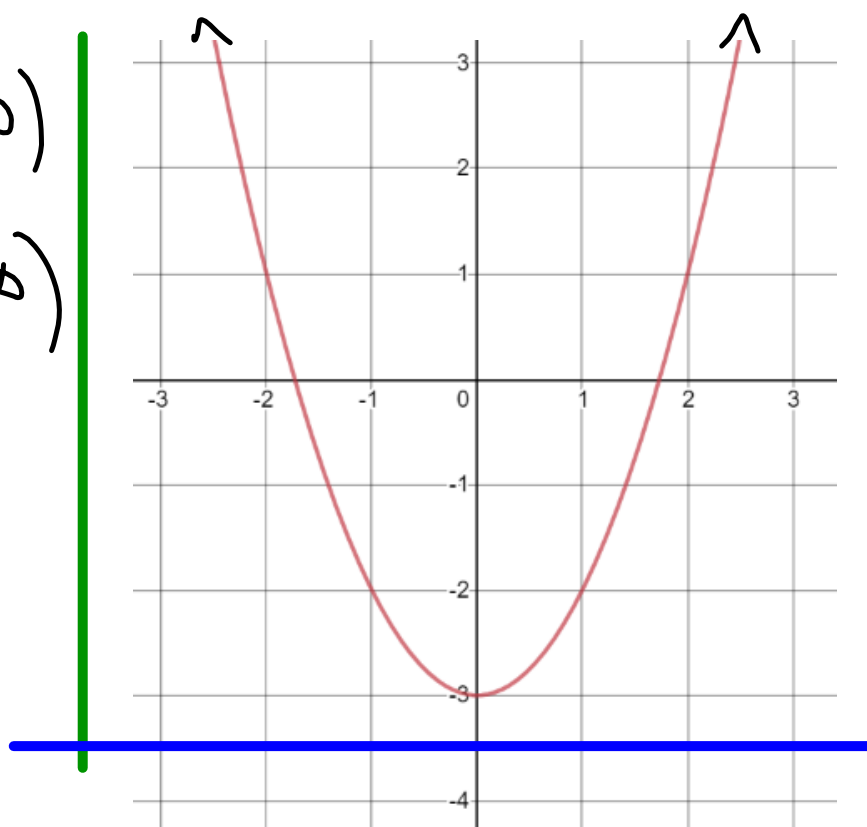
$$\text{Range: } (-\infty, 2] \quad y \leq 2$$
$$D: [-3, \infty) \quad x \geq -3$$

Ex: State the domain and range of the graph.

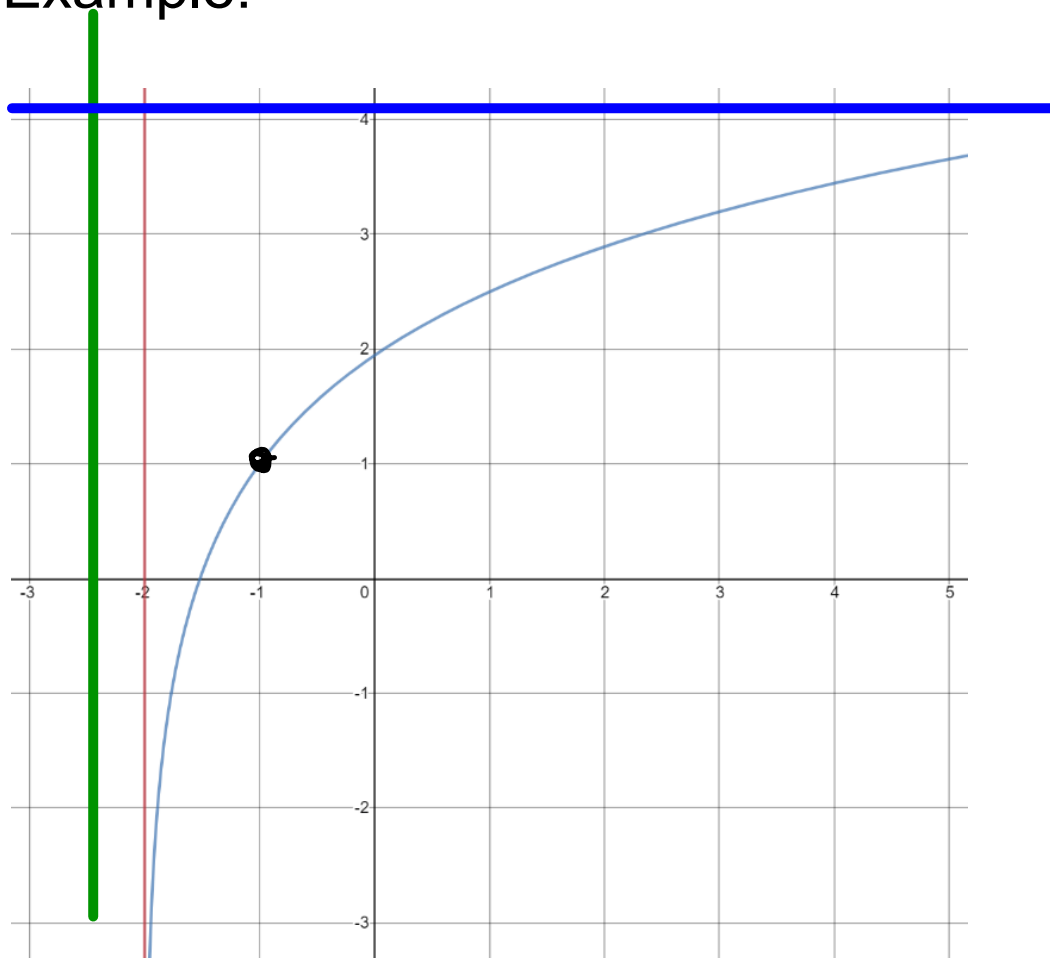
$$D: (-\infty, \infty)$$

$$R: [-3, \infty)$$

$$y \geq -3$$



Another Example:

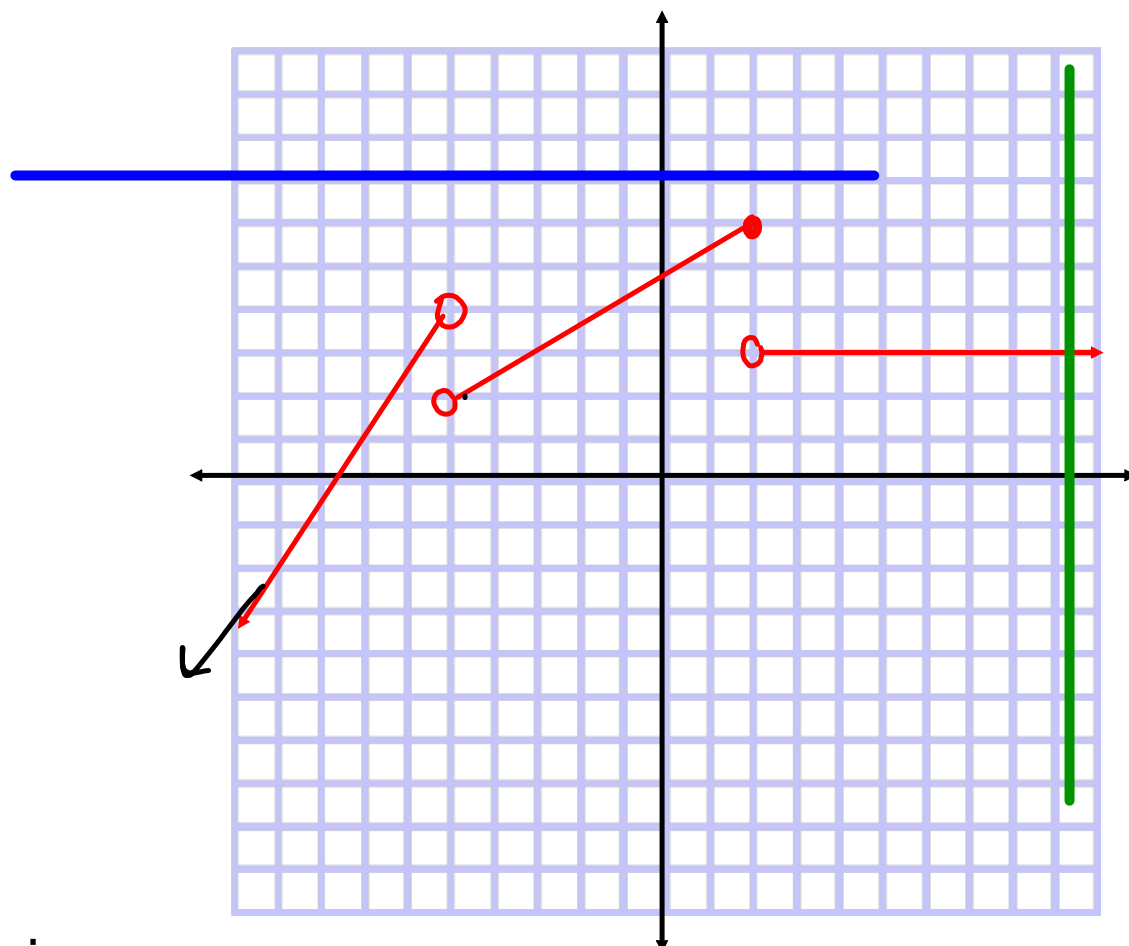


$$D: (-2, \infty)$$

$$x > -2$$

$$R: (-\infty, \infty)$$

U3.5 Domain and Range



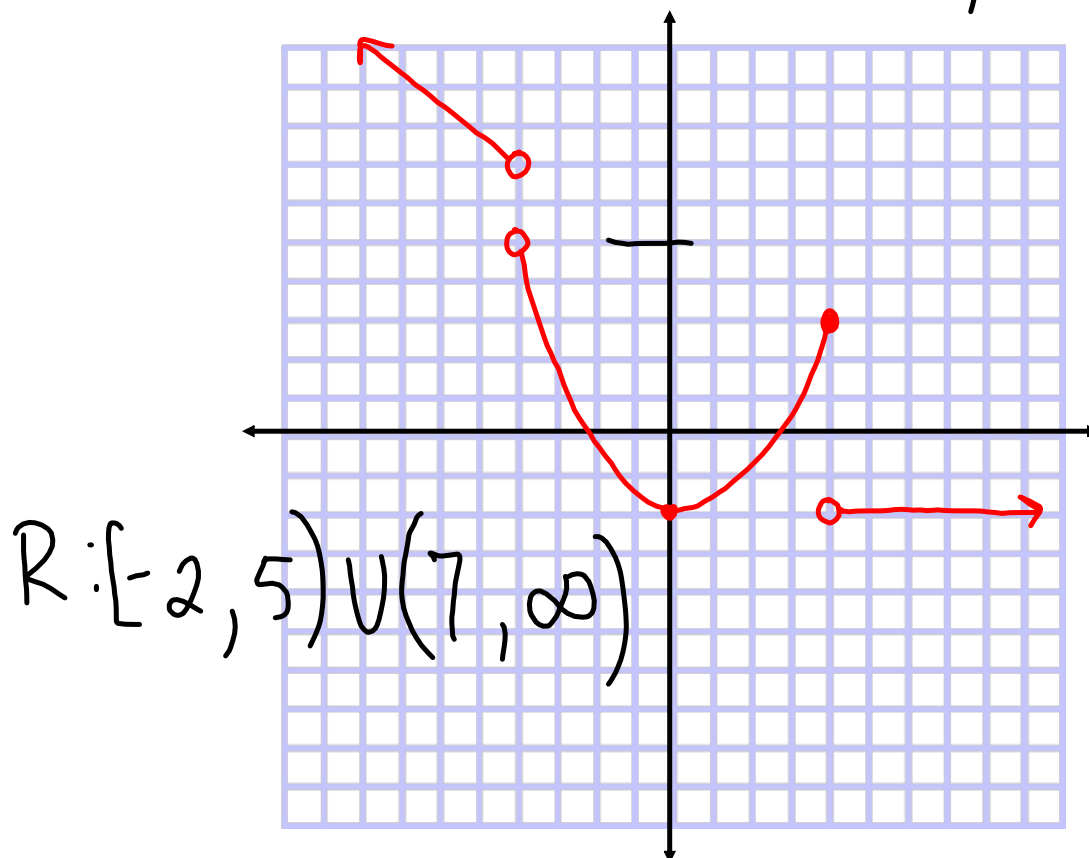
Domain:

$$(-\infty, -5) \cup (-5, \infty)$$

Range: $(-\infty, 4]$

U3.5 Domain and Range

$$D: (-\infty, -4) \cup (-4, \infty)$$



$$R: [-2, 5) \cup (7, \infty)$$

Domain:

Range:

Homework:

U3.5 Worksheet

QA over this! Make sure you can complete the worksheet problems without looking at your notes or your answer key!