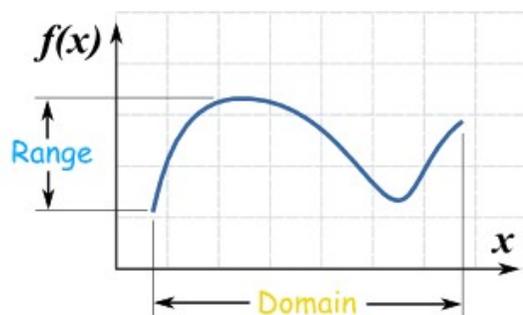


# DOMAIN & RANGE OF A FUNCTION PRACTICE

PRECALCULUS A  
UNIT 2 LESSON 1

## DOMAIN vs RANGE



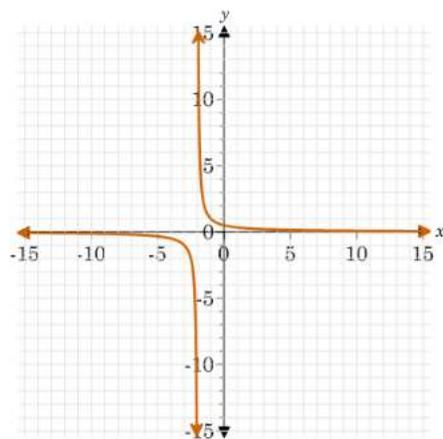
## INTERVAL NOTATION VS SET BUILDER NOTATION



### Key Concept

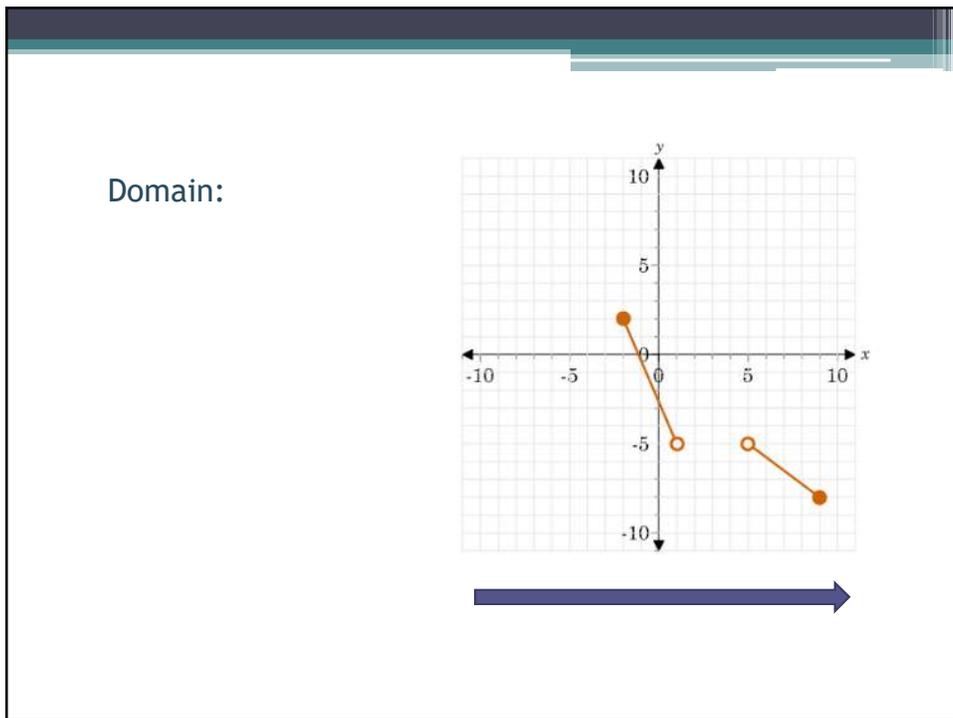
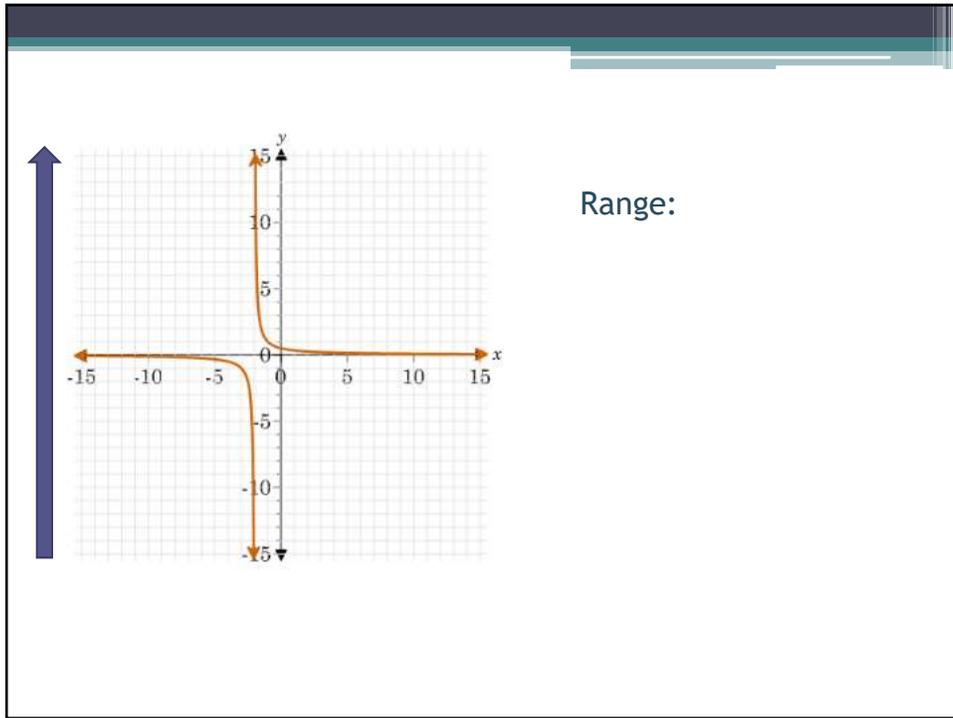
#### Interval Notation

- The open interval  $(a, b)$  is equivalent to the set  $\{x | a < x < b\}$ .
- The closed interval  $[a, b]$  is equivalent to the set  $\{x | a \leq x \leq b\}$ .
- The half-open interval  $(a, b]$  is equivalent to the set  $\{x | a < x \leq b\}$ .
- The half-open interval  $[a, b)$  is equivalent to the set  $\{x | a \leq x < b\}$ .
- The non-ending interval  $(-\infty, b)$  is equivalent to the set  $\{x | x < b\}$ .
- The non-ending interval  $[a, \infty)$  is equivalent to the set  $\{x | x \geq a\}$ .
- The non-ending interval  $(-\infty, \infty)$  represents all real numbers, which is also written as  $\{x | x \in \mathbb{R}\}$ .

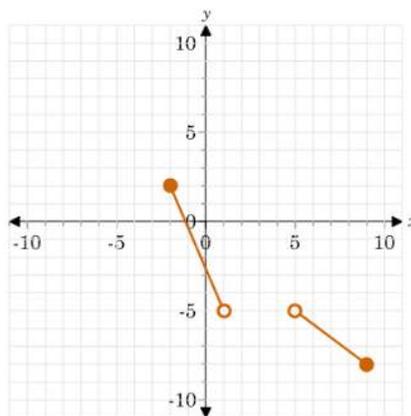


Domain:





Range:



1. Find the domain of the function . Write the answer in interval notation.

$$f(x) = \frac{2x^3 - 250}{x^2 - 2x - 15} \text{ (1 point)}$$

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$$f(x) = \frac{2x^3 - 250}{x^2 - 2x - 15} \quad (1 \text{ point})$$

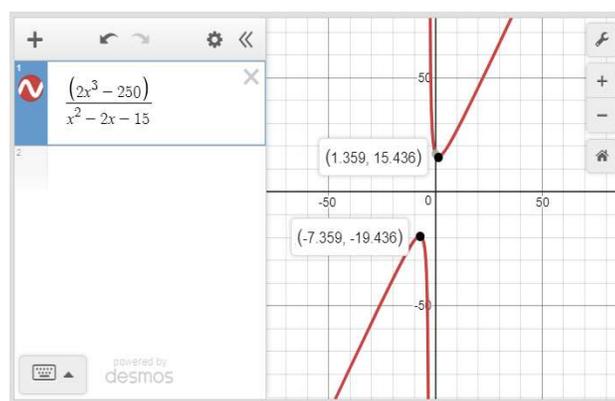
✓ (1 pts)  $(-\infty, -3) \cup (-3, 5) \cup (5, \infty)$

✗ (0 pts)  $(-\infty, -5) \cup (-5, 3) \cup (3, \infty)$

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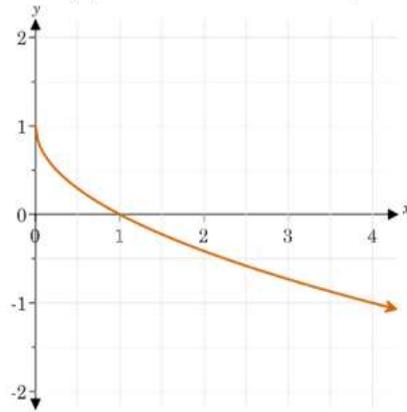
✗ (0 pts)  $(-\infty, -3) \cup (-3, \infty)$

Range? . . . Graph it!



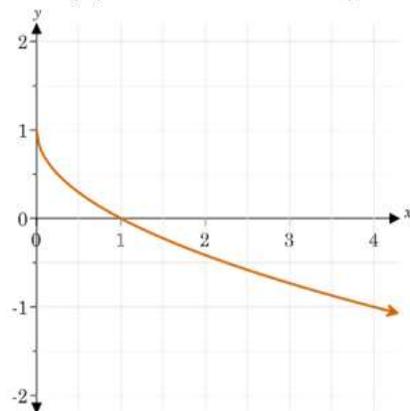
Approximately:  $(-\infty, -19.436] \cup [15.436, \infty)$

Use the graph of the function to answer the question.



2. Write the domain of the function given in the graph in set builder notation. (1 point)

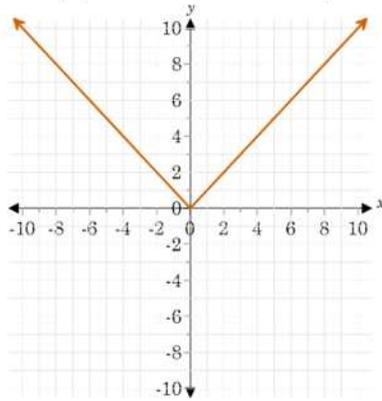
Use the graph of the function to answer the question.



- X** (0 pts)  $\{x|x \leq 1\}$
- ✓** (1 pts)  $\{x|x \geq 0\}$
- X** (0 pts)  $\{x|x > 0\}$
- X** (0 pts)  $\{x|x < 0\}$

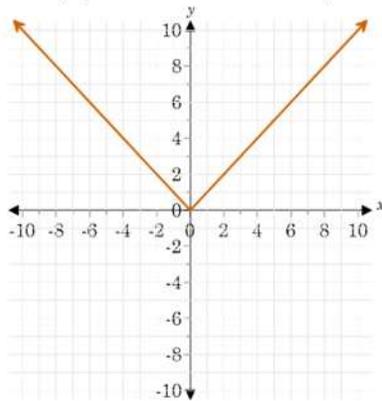
2. Write the domain of the function given in the graph in set builder notation. (1 point)

Use the graph of the function to answer the question.



3. Write the range of the function given in the graph in interval notation. (1 point)

Use the graph of the function to answer the question.



**X** (0 pts)  $(-\infty, \infty)$

**X** (0 pts)  $(0, \infty)$

**X** (0 pts)  $[0, 10]$

**✓** (1 pts)  $[0, \infty)$

3. Write the range of the function given in the graph in interval notation. (1 point)

4. Find the domain of the function  $g(x) = \frac{4}{x^2 + 3x + 2}$ . Write your answer in set builder notation. (1 point)

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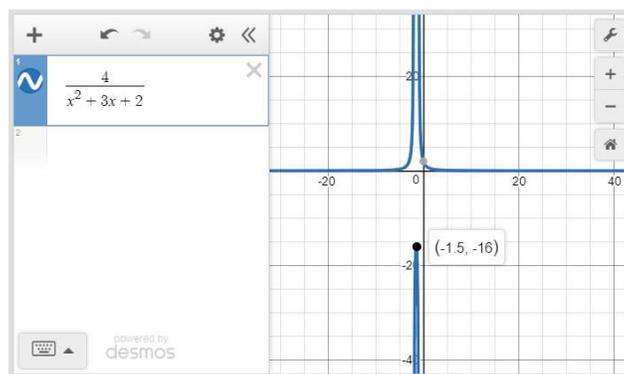
**X** (0 pts)  $\{x \mid x < 1 \text{ or } x > 2\}$

**X** (0 pts)  $\{x \mid x < 1 \text{ or } 1 < x < 2 \text{ or } x > 2\}$

**✓** (1 pts)  $\{x \mid x < -2 \text{ or } -2 < x < -1 \text{ or } x > -1\}$

**X** (0 pts)  $\{x \mid x < -2 \text{ or } x > -1\}$

Range? . . . Graph it!



$$\{y \mid y \leq -16 \text{ or } y > 0\}$$

$$(-\infty, -16] \cup (0, \infty)$$

5. Which of the following functions have only one point that is not in the domain? Select all that apply. (2 points)

$$f(x) = x^2 - 6x - 8$$

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

$$f(x) = \sqrt{2x - 1}$$

$$f(x) = \frac{1}{x^2 + 5x + 4}$$

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

5. Which of the following functions have only one point that is not in the domain? Select all that apply. (2 points)

(0 pts)  $f(x) = x^2 - 6x - 8$

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

(0 pts)  $f(x) = \sqrt{2x - 1}$

(0 pts)  $f(x) = \frac{1}{x^2 + 5x + 4}$

(1 pts)  $f(x) = \frac{5}{3 + x}$

Want to see more about this?

Check out the tutorials at  
[khanacademy.org](https://www.khanacademy.org)

Still have questions?

Reserve a time for a call with me at  
[jpatternmath.youcanbook.me](https://jpatternmath.youcanbook.me)