Section 1.4 - Domain and Range

Learning Goal:

By the end of today, I will have a better understanding of functional notation and set notation.

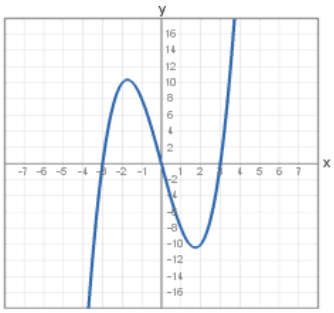
Sep 9-9:43 PM

FUNCTIONS
TERMINOLOGY

Relation
- a relationship between two variables

Function
- a relation for which each element in the domain is assigned only one element in the range

Domain
- set of all x coordinates
- horizontal axis
- independent variable



Range
- set of all y coordinates
- vertical axis
- dependent variable

Set Notation
- a way of writing a set of items or numbers within curly brackets { }.

Mapping Diagram
- a drawing with arrows to show the relationship between each value of x and the corresponding values of y

Jul 4-3:42 PM

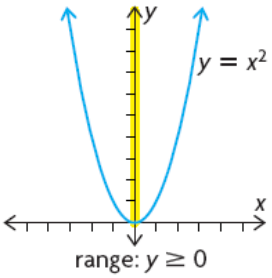
DOMAIN AND RANGE

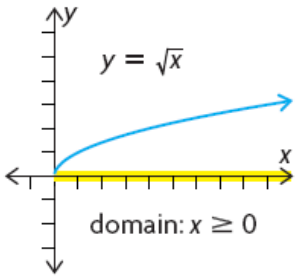
PROPER SET NOTATION

- Domain can represent a specific set or the "set of all real numbers" $\{x \in \mathrm{R}\}$
- Range can represent a specific set or the "set of all real numbers" $\{y \in \mathrm{R}\}$

Feb 10-12:30 PM

Examples





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Domain can represent a specific set or the "set of all real numbers LESS than zero"

$$\{x < 0\}$$

Range can represent a specific set or the "set of all real numbers greater than or equal to 5"

"except or condition" $\{y \geq 5\}$

$\{x \in \mathbf{R} | x \neq 0\}$ is the mathematical notation for saying "the set of x such that x can be any real number except 0."

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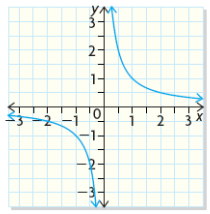
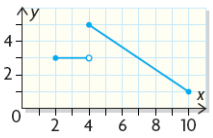
Write the domain and range for the following graphs; use sentences, Set notation, or both.

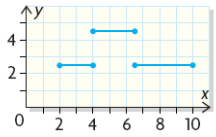
a)



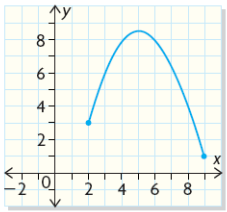
b)



c)



d)



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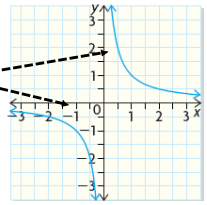
DOMAIN AND RANGE FOR THE PREVIOUS GRAPHS

a) The domain is $D = \{x \in \mathbf{R} | x \neq 0\}$.

The range is $R = \{y \in \mathbf{R} | y \neq 0\}$.

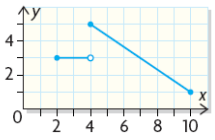
a)



b) The domain is
$D = \{x \in \mathbf{R} | 2 \leq x \leq 10\}$.

The range is $R = \{y \in \mathbf{R} | 1 \leq y \leq 5\}$.

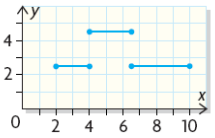
b)



c) The domain is
$D = \{x \in \mathbf{R} | 2 \leq x \leq 10\}$.

The range is
$R = \{y \in \mathbf{R} | y = 2.5, 5.5\}$.

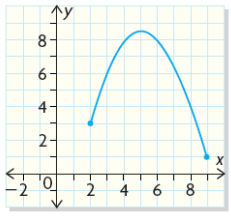
c)



d) The domain is
$D = \{x \in \mathbf{R} | 2 \leq x \leq 9\}$.

The range is
$R = \{y \in \mathbf{R} | 1 \leq y \leq 8.5\}$.

d)



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Homework

Pg. 35-37 #1-3, 9

Reading Task pg 38-39

Pg. 40 # 1,3,5,7

Sep 10-9:50 PM