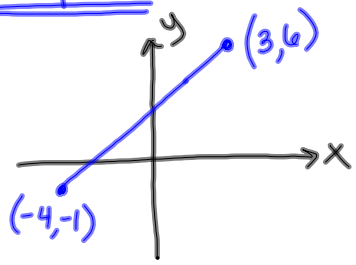
5.4 omit

5.5: Graphs of Relations & Functions

Domain: independent variable
- ⇒ x-axis
- ⇒ where the graph extends left to right.

Range: ⇒ dependent variable
- ⇒ y-axis
- ⇒ where the graph extends up and down.

example 1



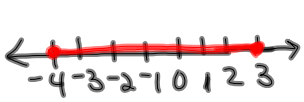
Domain

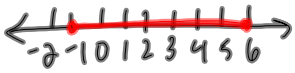
In words
All x-values from -4 to 3.

Range

All y-values from -1 to 6.

Number line





Interval Notation

Describes the domain and range as an interval of all values between two endpoints or boundaries.

[ ] Square brackets (closed brackets) are used when the endpoints are included.

( ) Curved brackets (open brackets) are used when the endpoints are NOT included.

Domain

$x \in [-4, 3]$

↑ belongs to

Range

$y \in [-1, 6]$

Set Notation

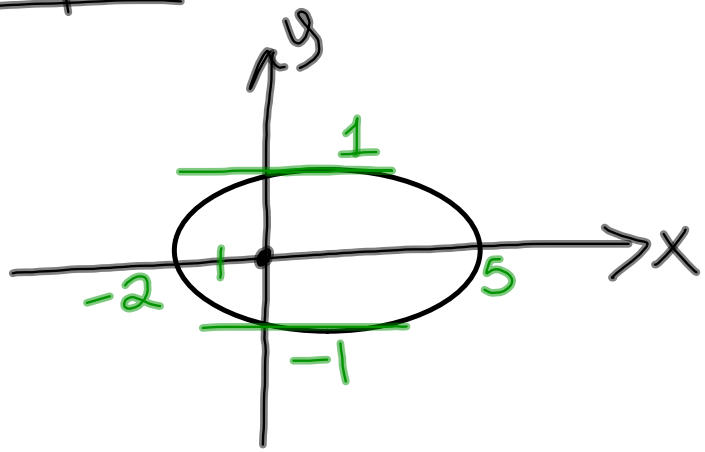
Describes the domain and range while identifying any restrictions

$$D: \{x \mid -4 \leq x \leq 3, x \in R\}$$

↑ Domain ↑ "such that" ↑ belongs to ↑ Real Numbers

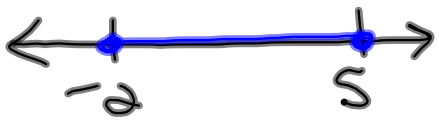
$$R: \{y \mid -1 \leq y \leq 6, y \in R\}$$

example 2



Domain

All x-values from -2 to 5

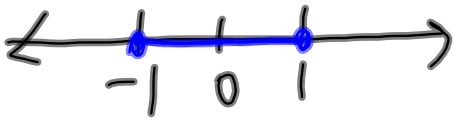


$x \in [-2, 5]$

$D: \{x \mid -2 \leq x \leq 5, x \in R\}$

Range

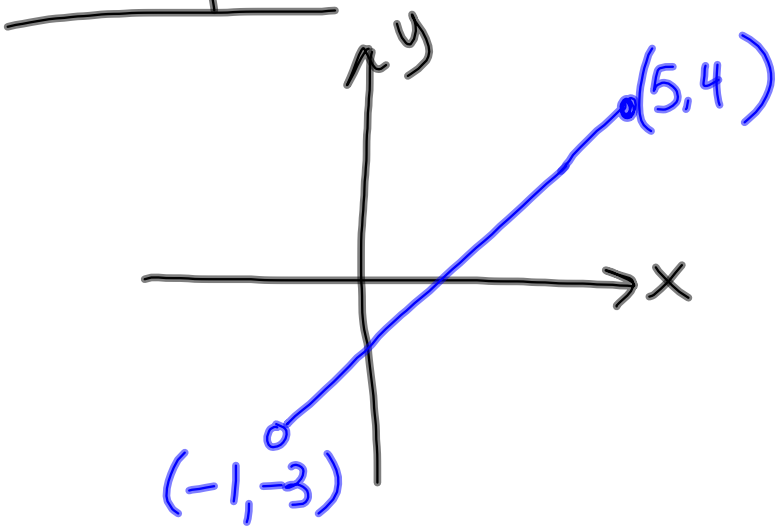
All y-values from -1 to 1.



$y \in [-1, 1]$

$R: \{y \mid -1 \leq y \leq 1, y \in R\}$

Example 3



Domain

All x-values from -1 to 5, but not including -1.

$x \in (-1, 5]$

Range

All y-values from -3 to 4, but not including -3.

$y \in (-3, 4]$

$R: \{y \mid -3 < y \leq 4, y \in R\}$

$D: \{x \mid -1 < x \leq 5, x \in R\}$

↑ no equal sign