

Domain and Range

October-27-17 10:42 AM

Domain and Range describe the possible values for a function / location of a graph.

Domain: possible x-values

Range: possible y-values

Two ways to write D + R:

$$5 < 8$$

① Use inequalities $>$, \geq , $<$, \leq

② Interval notation $[min, max]$ (min, max) ← more on this next day

symbols that are used:

Include Endpoints

closed dot ●

[Brackets]

$\geq \leq$

Excludes Endpoints

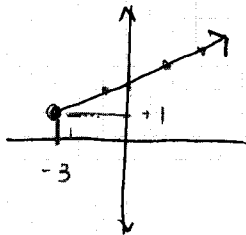
open dot ○

(parentheses)

$> <$

Ex. state the domain + range using inequalities:

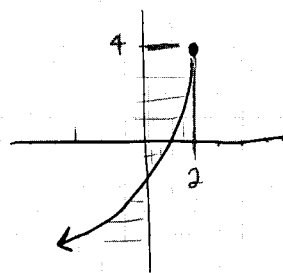
①



$$D: x \geq -3$$
$$[-3, \infty)$$

$$R: y \geq 1$$
$$[1, \infty)$$

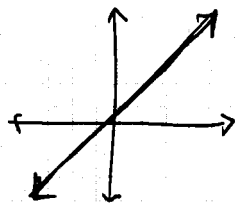
②



$$D: x \leq 2$$

$$R: y \leq 4$$

③



$$D: x \in \mathbb{R}$$

(x includes all real numbers)

$$-\infty < x < \infty$$

$$R: y \in \mathbb{R}$$

(y includes all real numbers)

$$-\infty < y < \infty$$

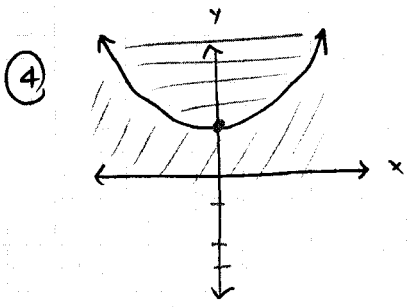
↙ ↓
 * Line goes forever
 in BOTH directions

$$-\infty < x < \infty$$

$$-\infty < y < \infty$$

↑ ↑
 min max

* Infinity is a concept, not an actual number.
 ∴ only use $<$, $>$,
 not \leq , \geq .

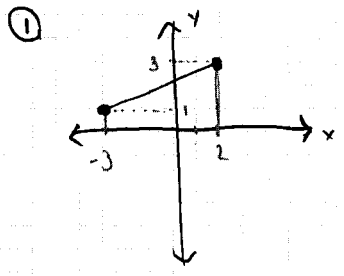


$$D: x \in \mathbb{R}$$

$$R: y \geq 2$$

line crosses @ 2
 so 2 is included

Ex. Use interval notation to state the Domain and Range.

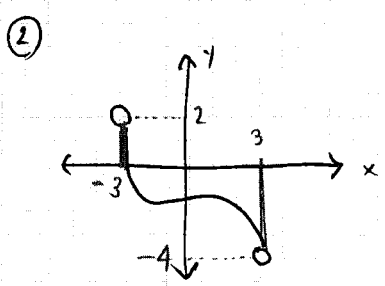


$$D: [-3, 2]$$

$$-3 \leq x \leq 2$$

$$R: [1, 3]$$

$$1 \leq y \leq 3$$

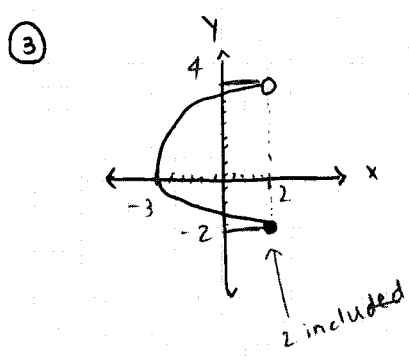


$$D: (-3, 3)$$

$$-3 < x < 3$$

$$R: (-4, 2)$$

$$-4 < y < 2$$



$$D: [-3, 2]$$

$$-3 \leq x \leq 2$$

$$R: [-2, 4)$$

$$-2 \leq y < 4$$

⊗ Stating the Domain + Range from a data set or table of values:

- Domain: List all x's

- Range: List all y's

}

Ex. List the domain + range:

a)

x	y
-10	1
-5	2
0	3
5	4
10	5

$$D: \{-10, -5, 0, 5, 10\}$$

* curly brackets indicate this is a set of values

$$R: \{1, 2, 3, 4, 5\}$$

b) Set: $\{(1, 5), (2, 7), (3, 0), (4, 5), (5, 9)\}$

$$D: \{1, 2, 3, 4, 5\}$$

$$R: \{5, 7, 0, 5, 9\}$$

↑ sometimes duplicates are omitted.

sometimes numbers are re-organized in order.

① ~~WB: Page 426 # 1, 2, 5, 7, 8~~

② ~~Domain + Range WS~~