

Notes Chapter 1.1 Interval and Set Notation

Type of Point	Interval Notation Symbol	Inequality Notation Symbol
open: o	()	< >
closed: •	[]	≤ ≥

Other Important Symbols And Meaning

∞ : infinity ; forever right
 $-\infty$: negative infinity; forever left

Examples

	Inequality Notation	Interval Notation	Graph
1	$x \geq -3$	$[-3, \infty)$	
2	$-4 < x \leq 2$	$(-4, 2]$	
3	$-5 \leq x < 6$	$[-5, 6)$	
4	$x < 0$ and $x \geq 3$	$(-\infty, 0) \cup [3, \infty)$	

5. You are writing a term paper.

- a. Not including the title page and bibliography page, the paper must contain at least 1500 words but not more than 2000 words. Find the interval for the number x of words for the paper using interval notation.

$$[1500, 2000]$$

- b. The paper must contain a minimum of 5 bibliographies. Find the interval for the number x of bibliographies using set-builder notation ~~braces~~. ^{List}

~~$$\{1, 2, 3, 4, 5\}$$~~

$$\{5, 6, 7, \dots\}$$

Discrete data

If real #s

$$x \geq 5$$

$$[5, \infty)$$

Set notation and Set Builder Notation

Set Notation: List individual elements in a set and enclose the set in { }.

braces

Set-Builder Notation

Set-builder notation uses symbols to define a set in terms of the properties of the members of the set.

Set-builder notation

$$\{x | x < b\}$$



Words "the set of all real numbers x such that x is less than b "

Set-builder Notation

Graph

$$\{x | x \leq a \text{ or } x > b\}$$



$$\{x | x \neq a\}$$



Use braces to list the elements in the set.

6. the set of whole numbers less than 17

$$\{0, 1, 2, \dots, 16\}$$

7. the set of even integers greater than -10

$$\{-8, -6, -4, -2, 2, 4, \dots\}$$

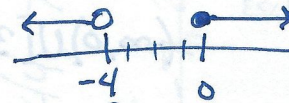
In Exercises 7 – 11, write the set of numbers in set-builder notation.

8. $[-3, 3]$

$$\{x | -3 \leq x \leq 3\}$$

9. $(-\infty, -4)$ or $[0, \infty)$

$$\{x | x < -4 \text{ or } x \geq 0\}$$



10. the set of all real numbers except -12

$$\{x | x \neq -12\}$$

11. the set of all real numbers less than -3

$$\{x | x < -3\}$$

12. the set of all integers greater than 10 and less than 80

$$\{x | 10 < x < 80\}$$