

Interval Notation

Use the following rules for writing interval notation:

- 1) Always use $()$ around ∞ and $-\infty$
- 2) If a value IS IN the domain and range, then use a $[]$ around the value
- 3) If a value IS NOT IN the domain and range, then use a $()$ around the value

Inequality	Interval Notation
$-3 < x < 7$	$(-3, 7)$
$-4 \leq x \leq 10$	$[-4, 10]$
$3 < y < 15$	$(3, 15)$
$-7 \leq x < 8$	$[-7, 8)$
$x < 4$	$(-\infty, 4)$
$y > 2$	$(2, \infty)$
$x \leq -4$	$[-\infty, -4]$
$y \geq -5$	$[-5, \infty)$

Practice: Write the following in Interval Notation.

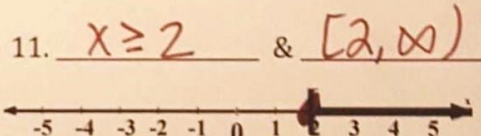
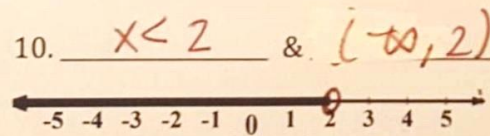
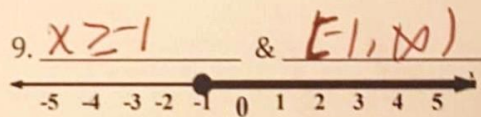
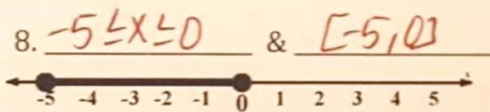
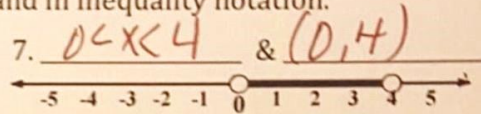
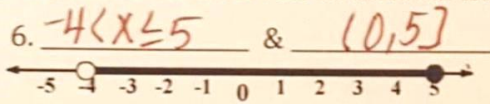
- 1) $-3 \leq x < 2$ $[3, 2)$
- 2) $-6 < y < 12$ $(-6, 12)$
- 3) $x \geq 7$ $[7, \infty)$
- 4) $y < 4$ $(-\infty, 4)$

Interval Notation

For 1-5, Use inequality and interval notation on the table that follows to write the set of numbers that are:

	<i>Word Phrase</i>	<i>Inequality Notation</i>	<i>Interval Notation</i>
1.	between -5 and 6, not including the endpoints.	$-5 < x < 6$	$(-5, 6)$
2.	less than 1.5.	$x < 1.5$	$(-\infty, 1.5)$
3.	greater than or equal to -5.	$x \geq -5$	$[-5, \infty)$
4.	between -4 and 0, including the endpoints.	$-4 \leq x \leq 0$	$[-4, 0]$
5.	including -3.5, but excluding 2.	$-3.5 \leq x < 2$	$[-3.5, 2)$

For 6-11, Write the intervals in interval notation and in inequality notation.



For 12-17, Write the given intervals in inequality notation.

12. $[-5, 8)$ $-5 \leq x < 8$ 13. $(1, 4)$ $1 < x < 4$

14. $(0, 9.5]$ $0 < x \leq 9.5$ 15. $(-\infty, 30)$ $x < 30$

16. $[0, 18.3]$ $0 \leq x \leq 18.3$ 17. $[1/2, \infty)$ $x \geq 1/2$

18. Missy was asked to write $x > -9$ in interval notation. Her answer was $(-9, \infty)$ but her instructor marked it wrong. Explain why.

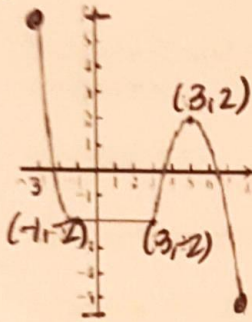
Because she has a bracket next to ∞ , which can't equal ∞ .

Interval Notation

For 19-24, State the domain and range of the functions graphed below.

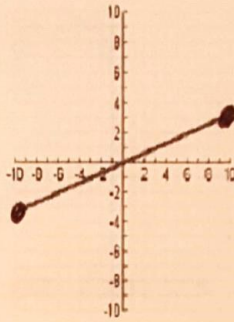
Name the domain and range of each relation using interval notation.

19.



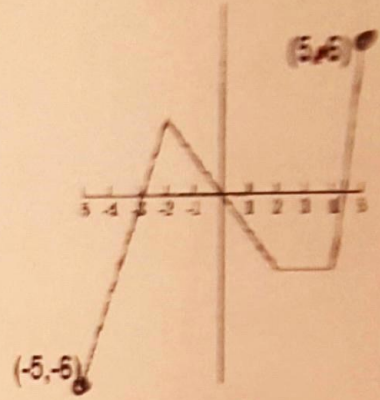
Domain: $[-1, 7]$
Range: $[-4, 2]$

20.



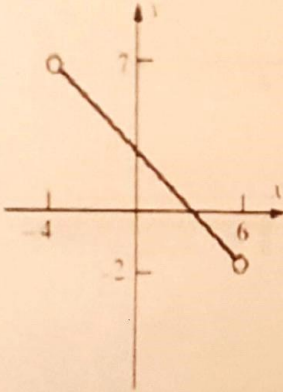
Domain: $[-10, 10]$
Range: $[-4, 3]$

21.



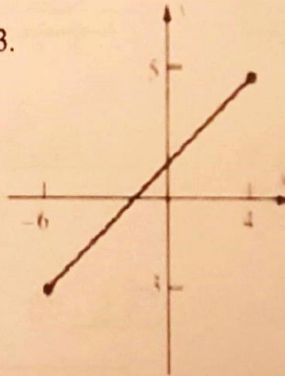
Domain: $[-5, 5]$
Range: $[-3, 6]$

22.



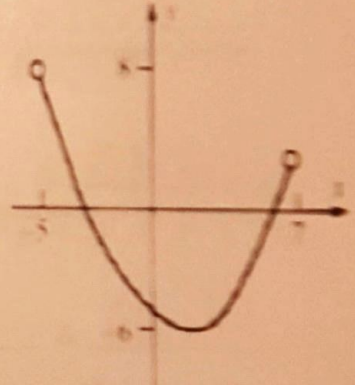
Domain: $(-4, 6)$
Range: $(-2, 7)$

23.



Domain: $[-6, 4]$
Range: $[-3, 5]$

24.



Domain: $(-5, 7)$
Range: $[-6, 8)$