Practice: Interval Notation

Use interval notation to describe the number(s) graphed on each number line.

1. Use interval notation to describe the number(s) graphed on the number line.

2. Use interval notation to describe the number(s) graphed on the number line.

3. Use interval notation to describe the number(s) graphed on the number line.

4. Use interval notation to describe the number(s) graphed on the number line.

5. Use interval notation to describe the number(s) graphed on the number line.

6. Use interval notation to describe the number(s) graphed on the number line.

New stuff! Union vs. Intersection

**Union:** the symbol $\cup$

Numbers that...
- belong in one set OR another
- are brought together

We could describe the numbers that belong to the interval $(-5, -1]$ OR the interval $(2, 4)$ through the notation $(-5, -1] \cup (2, 4)$. Its visual representation is below.

$$(-5, -1] \cup (2, 4)$$

**Intersection:** the symbol $\cap$

Numbers that...
- belong in one set AND another
- two sets share

We could describe the numbers that belong to the interval $(-3, 2)$ AND the interval $[0, 5)$ through the notation $(-3, 2) \cap [0, 5)$. A visualization of the set is below.

$$(-3, 2) \cap [0, 5)$$

Describe the intervals on the number line using interval notation. You may need a $\cup$ or $\cap$ symbol.

7. Describe the intervals on the number line using interval notation.

8. Describe the intervals on the number line using interval notation.
Use interval notation to analyze each graph.

9. When is the graph *above* the $x$-axis?

10. When is the graph *below* the $x$-axis?

11. On what interval(s) is the graph *below* the $x$-axis?

12. On what interval(s) is the graph *above* the $x$-axis?

13. When is the graph *above* AND *below* the $x$-axis?

14. When is the graph *above* AND *below* the $x$-axis?

Create a graph that has the following characteristics.

15. The graph is above the $x$-axis on the interval $(2, \infty)$

16. The graph is below the $x$-axis on the interval $(-4, 0) \cup (2, 5]$. 