# Algebra II  Lesson #3  Unit 1

# Class Worksheet #3

# For Worksheets #4 & #5

# Algebra II   Unit 1   Compound Inequalities

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**Compound inequalities** are formed when two basic inequalities are 'joined' using the 'connective' **and** or the 'connective' **or**.

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# Algebra II   Class Worksheet #3   Unit 1
## Solving Compound Inequalities  -  Type 1  <u>and</u>

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Solve each of the following for x.   Represent the solution set as an interval or the union of intervals and sketch its graph.

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# Algebra II   Class Worksheet #3   Unit 1

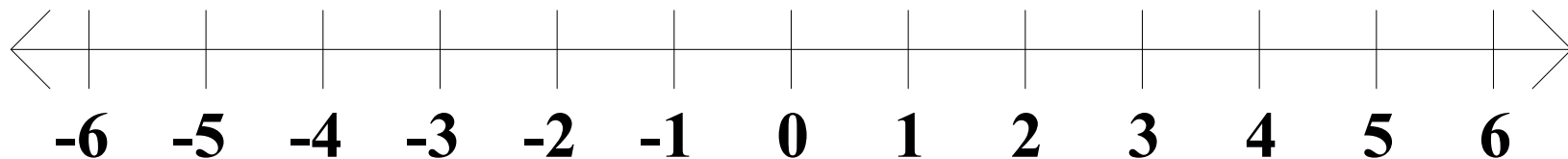## Solving Compound Inequalities  -  Type 1  <u>and</u>
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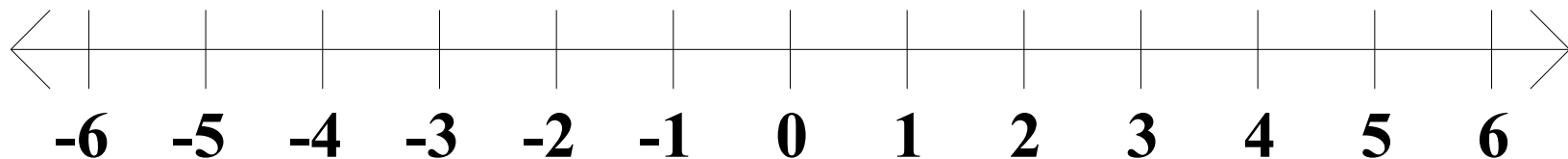
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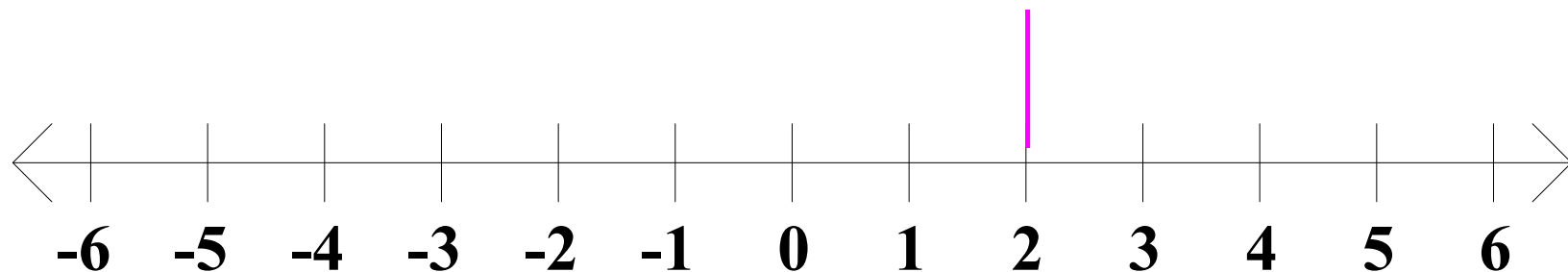
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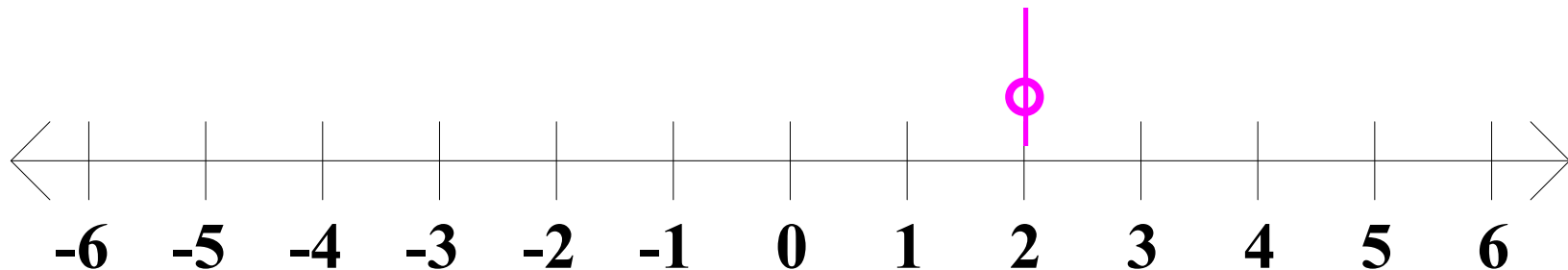
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# Algebra II   Class Worksheet #3   Unit 1

Solving Compound Inequalities  -  Type 1  <u>and</u>

   Step 1:  Solve each basic inequality.

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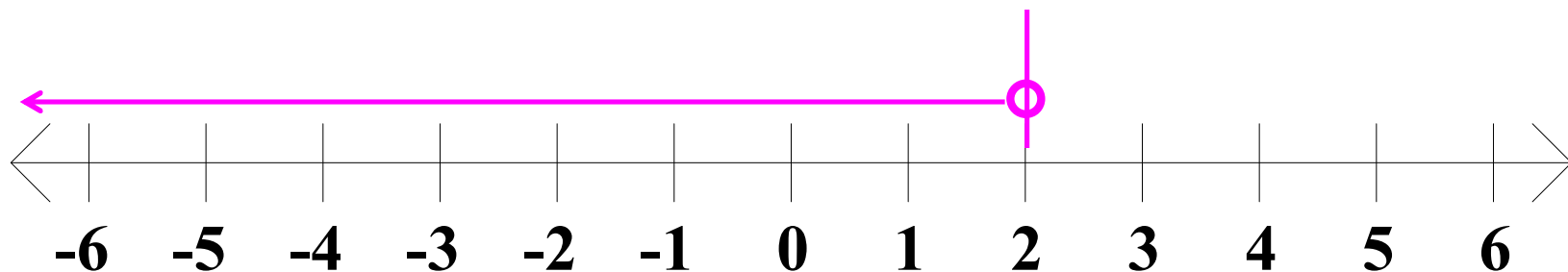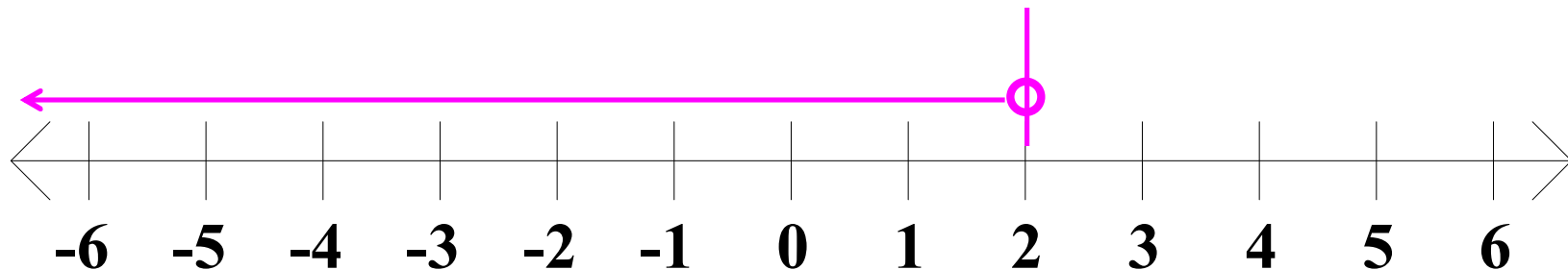
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   Step 1:  Solve each basic inequality.
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$$1. \quad 3x + 5 < 11 \quad \text{and} \quad 2x + 3 > -3$$

$$3x < 6 \qquad\qquad 2x > -6$$

$$x < 2 \quad \underline{\text{and}} \quad x > -3$$

$$\longleftarrow \overset{|}{-6} \; \overset{|}{-5} \; \overset{|}{-4} \; \overset{|}{-3} \; \overset{|}{-2} \; \overset{|}{-1} \; \overset{|}{0} \; \overset{|}{1} \; \overset{|}{2} \; \overset{|}{3} \; \overset{|}{4} \; \overset{|}{5} \; \overset{|}{6} \longrightarrow$$

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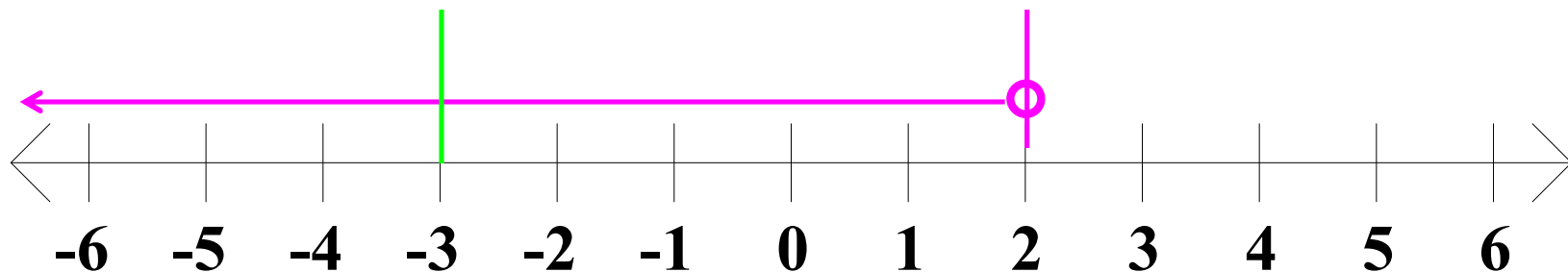
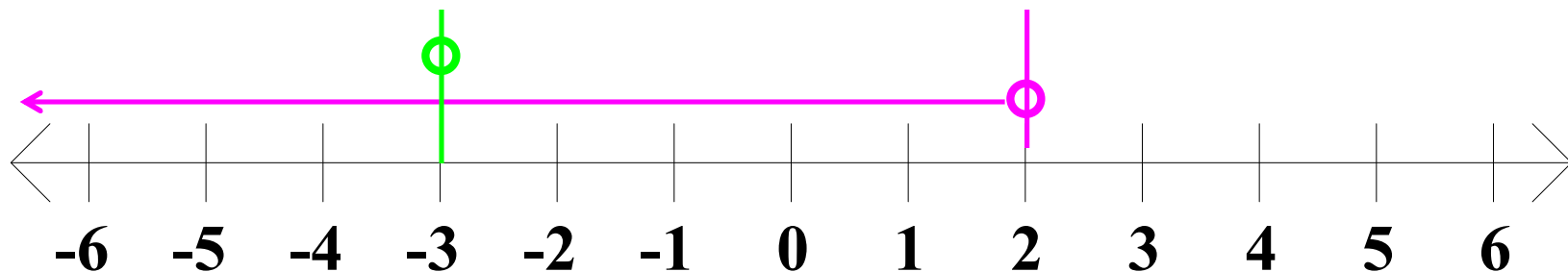    1.   $3x + 5 < 11$  and  $2x + 3 > -3$

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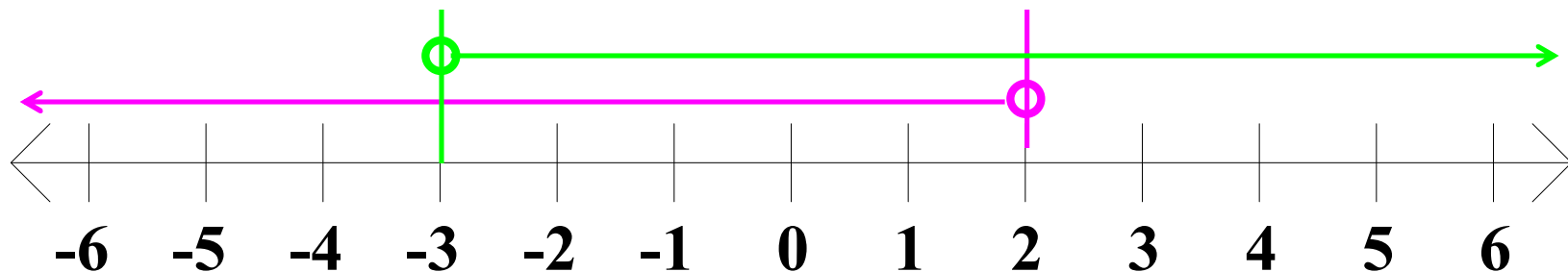
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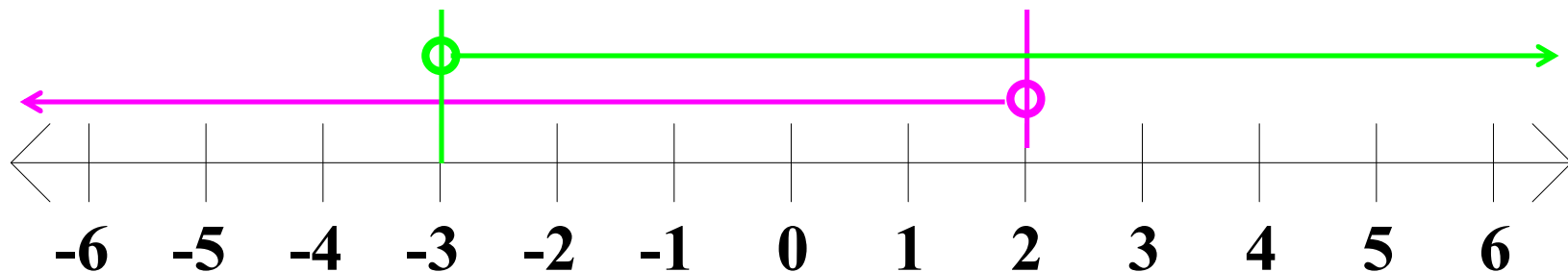
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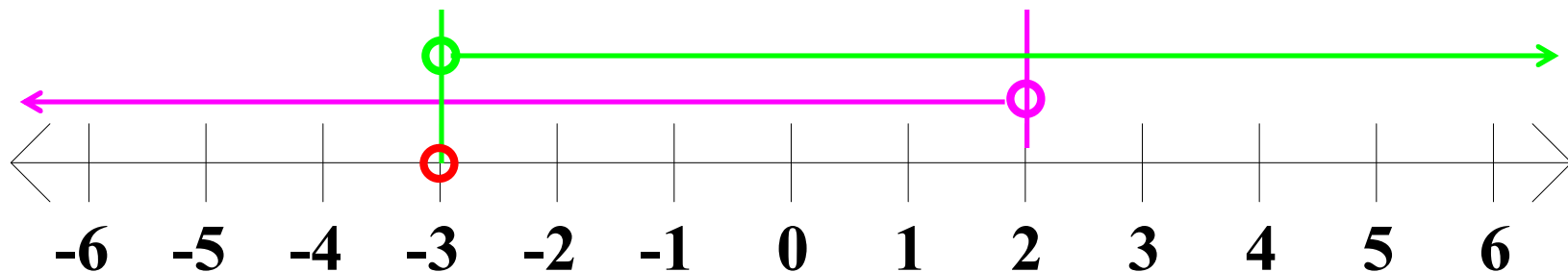
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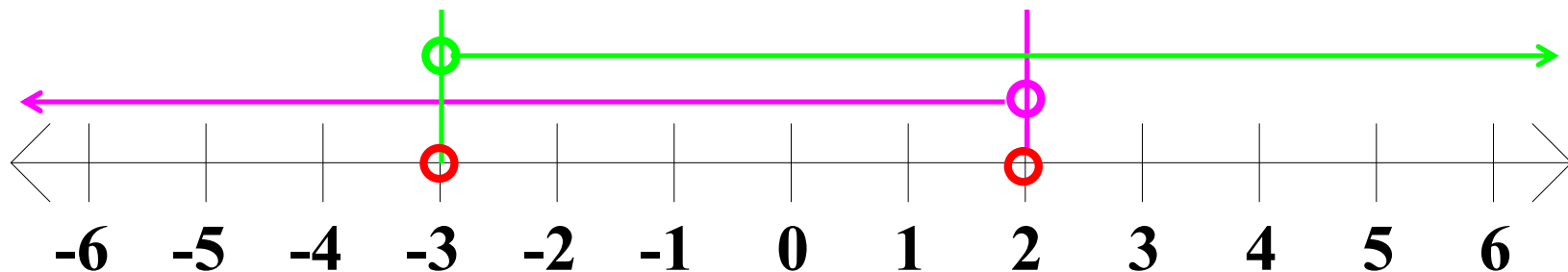
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# Algebra II   Class Worksheet #3   Unit 1

**Solving Compound Inequalities  -  Type 1  <u>and</u>**

Step 1:  Solve each basic inequality.

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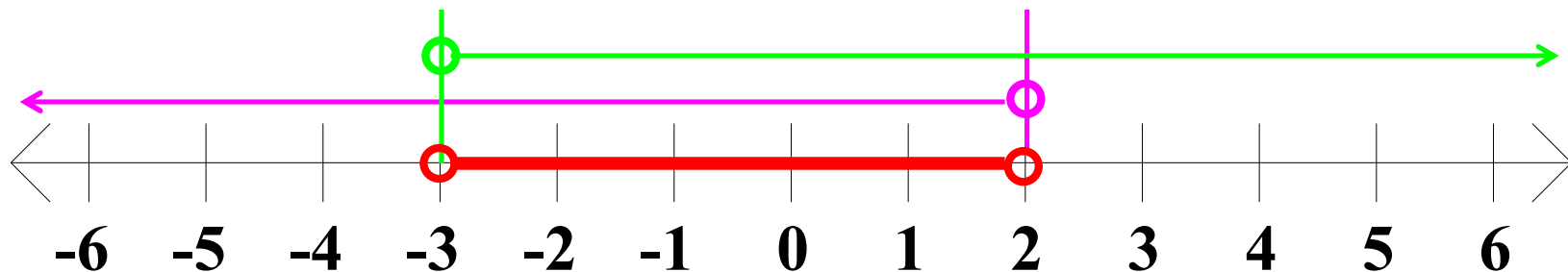
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$3x < 6$                    $2x > -6$

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# Algebra II   Class Worksheet #3   Unit 1

**Solving Compound Inequalities  -  Type 1  <u>and</u>**

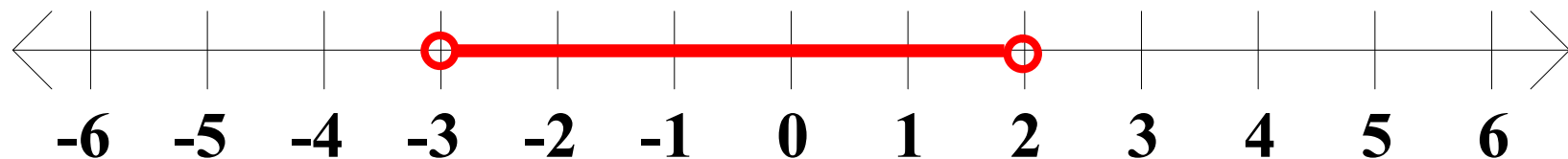   Step 1:  Solve each basic inequality.

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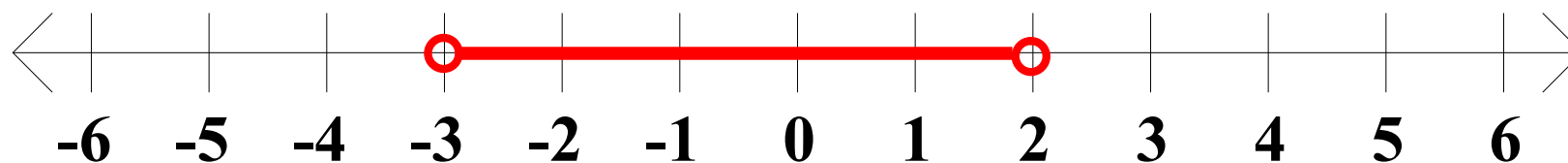
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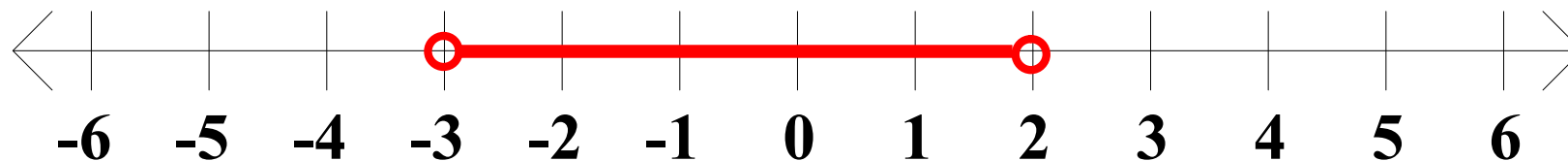
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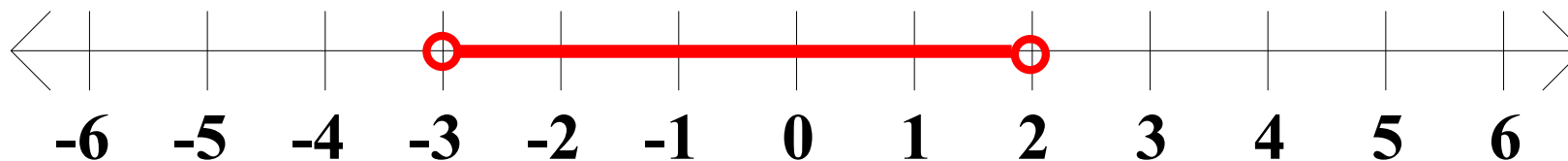
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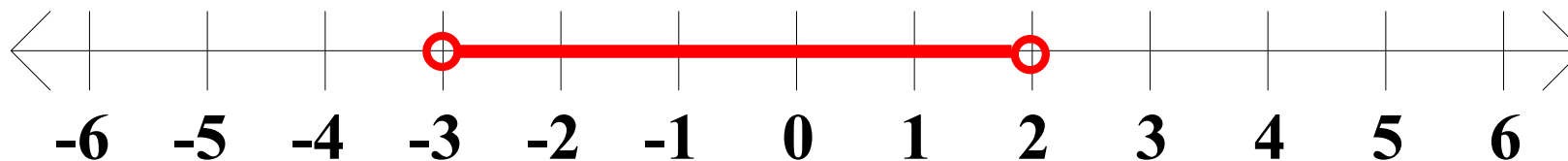
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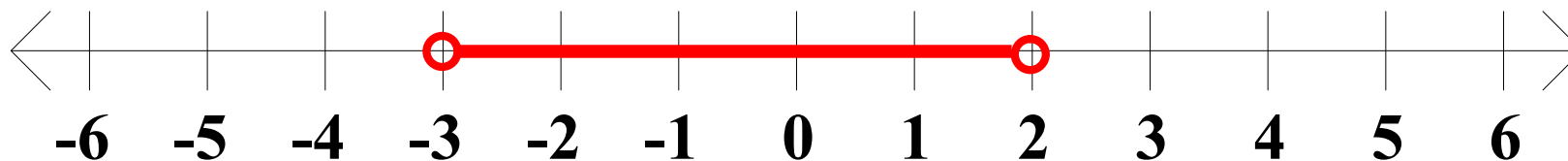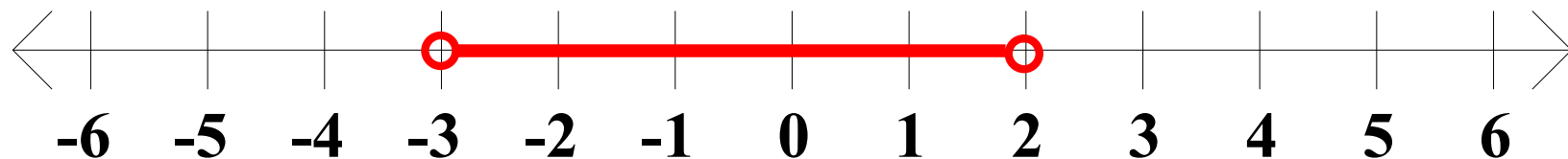Step 3:  Express the final solution in simplest form.

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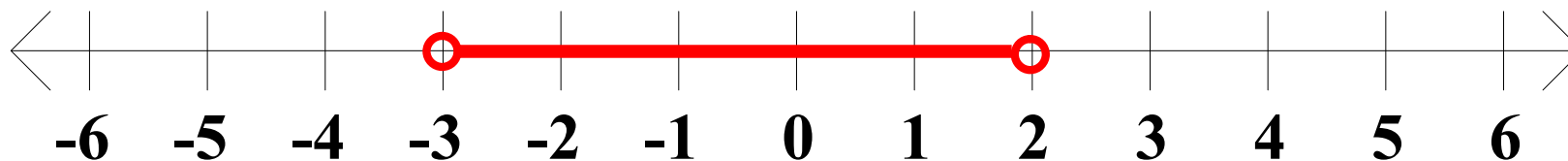Step 3:  Express the final solution in simplest form.

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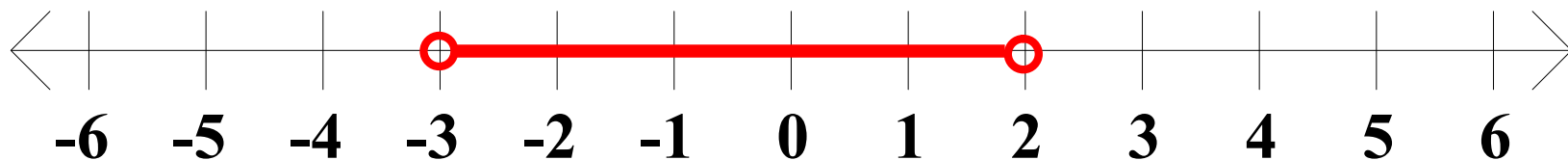Step 3:  Express the final solution in simplest form.

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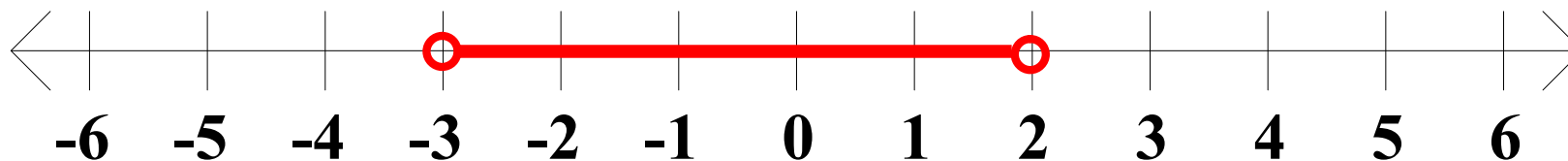
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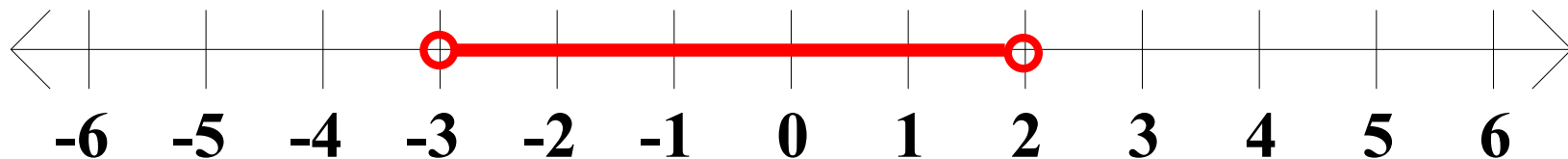
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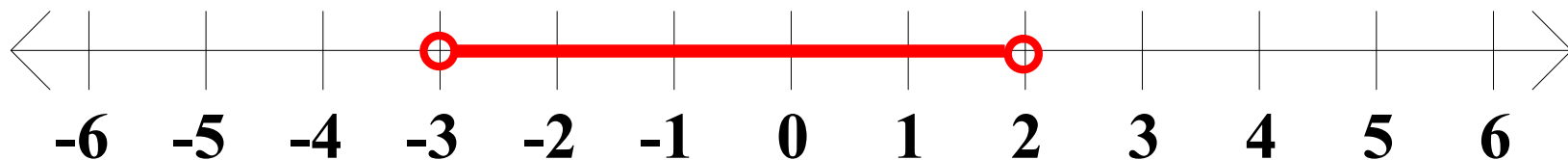
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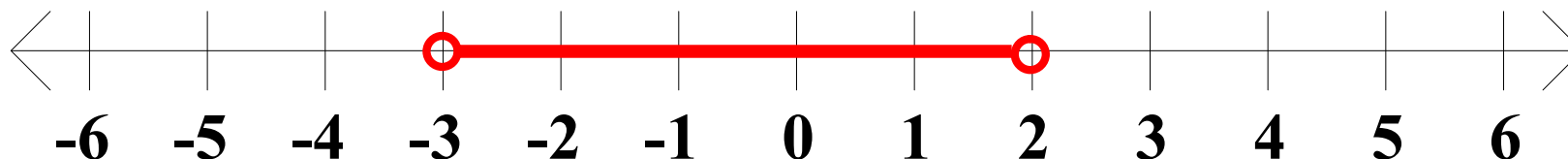
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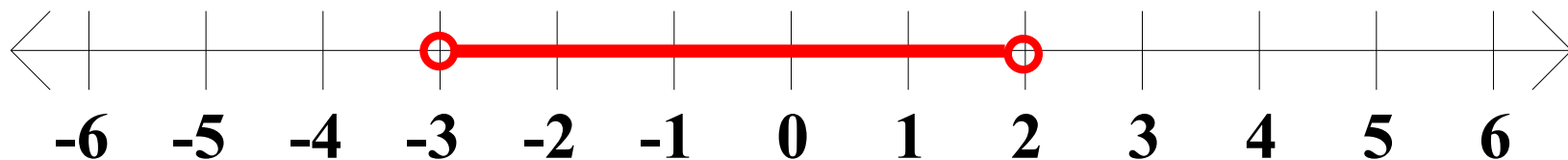
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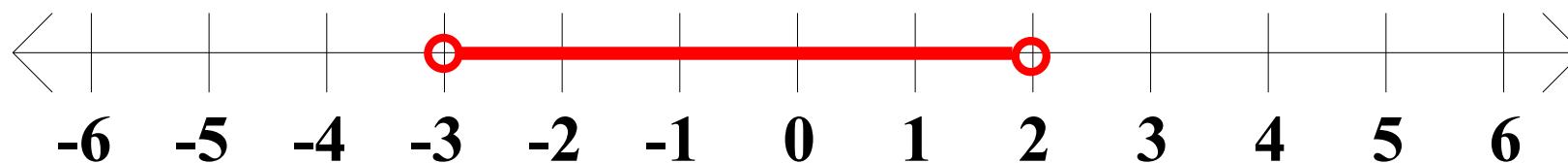
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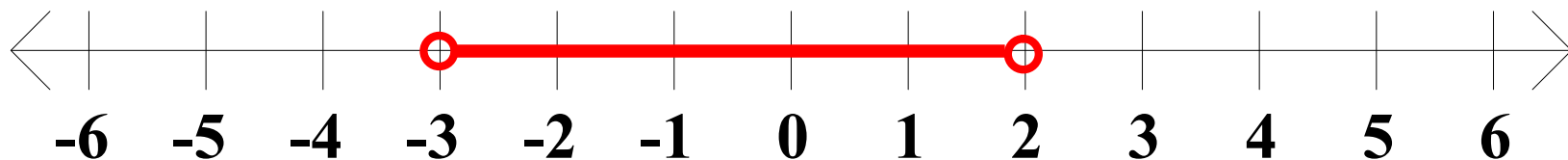
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# Algebra II   Class Worksheet #3   Unit 1

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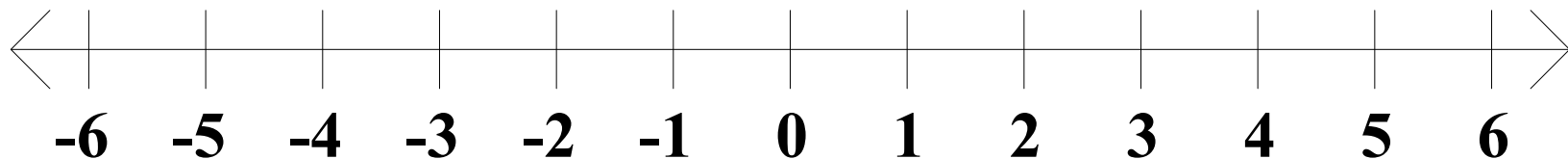
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# Algebra II   Class Worksheet #3   Unit 1

**Solving Compound Inequalities  -  Type 1  <u>and</u>**

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**Step 2:  The solution set of the compound inequality is the <u>'intersection'</u> of the solution sets of the basic inequalities.**
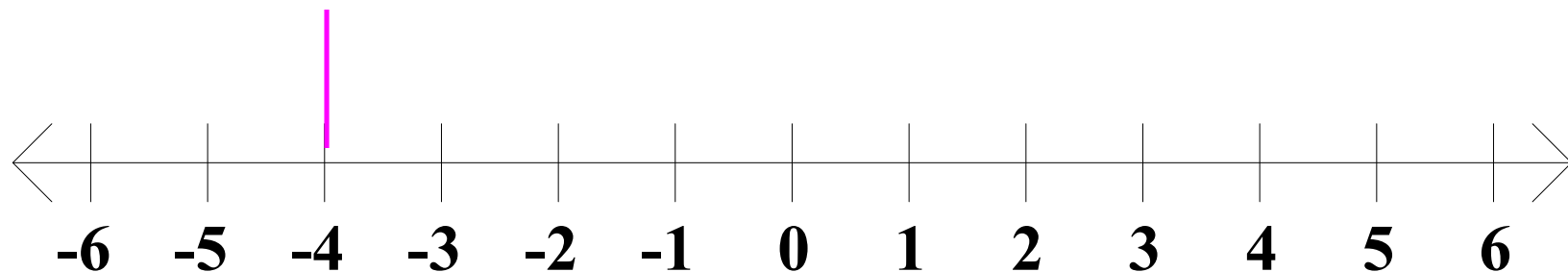
**Step 3:  Express the final solution in simplest form.**

**Solve each of the following for x.   Represent the solution set as an interval or the union of intervals and sketch its graph.**

**2.   $-2x - 3 \geq 5$  and  $4x + 6 \leq 14$**

$$-2x \geq 8 \qquad\qquad 4x \leq 8$$

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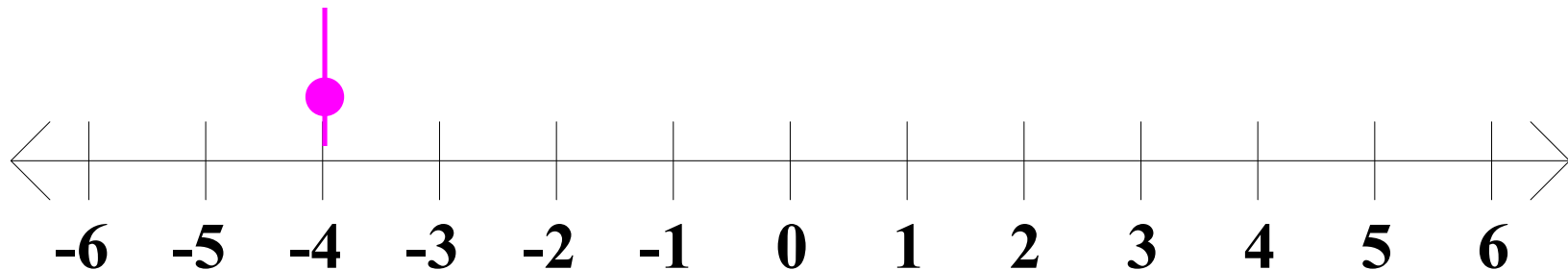
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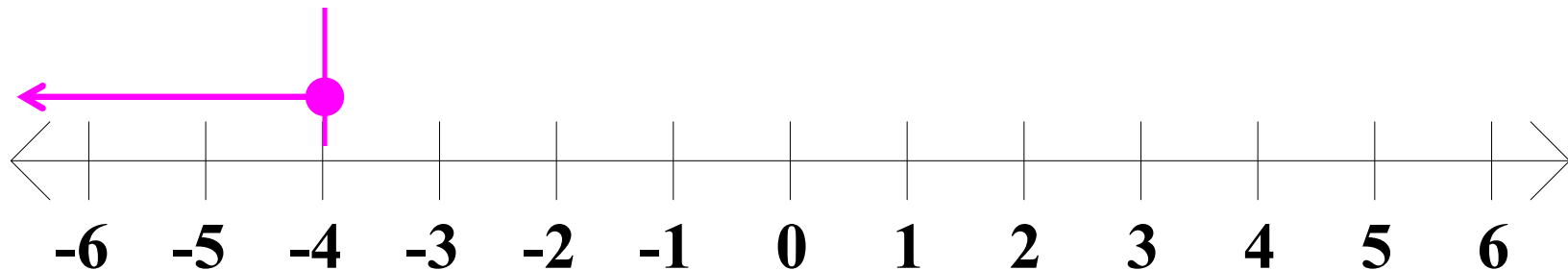
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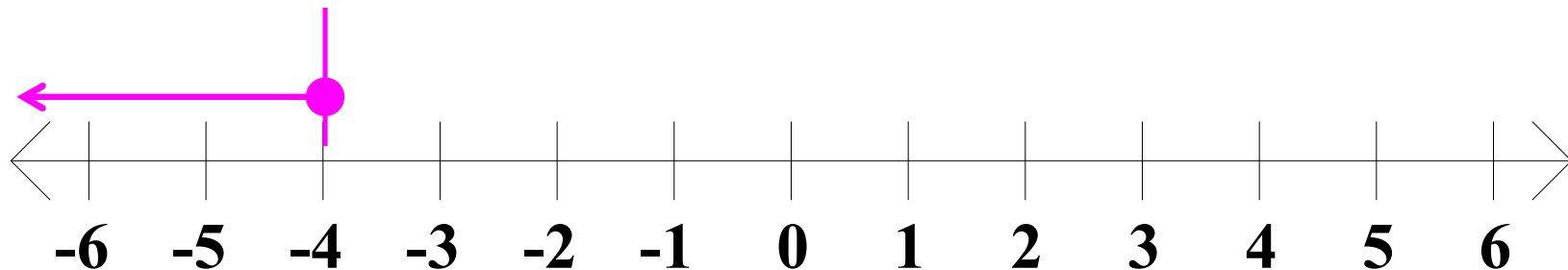$$2. \quad -2x - 3 \geq 5 \quad \text{and} \quad 4x + 6 \leq 14$$

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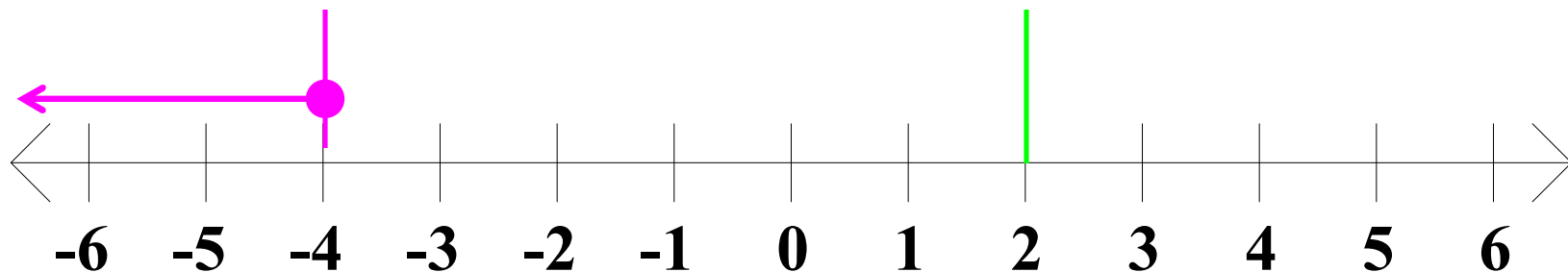
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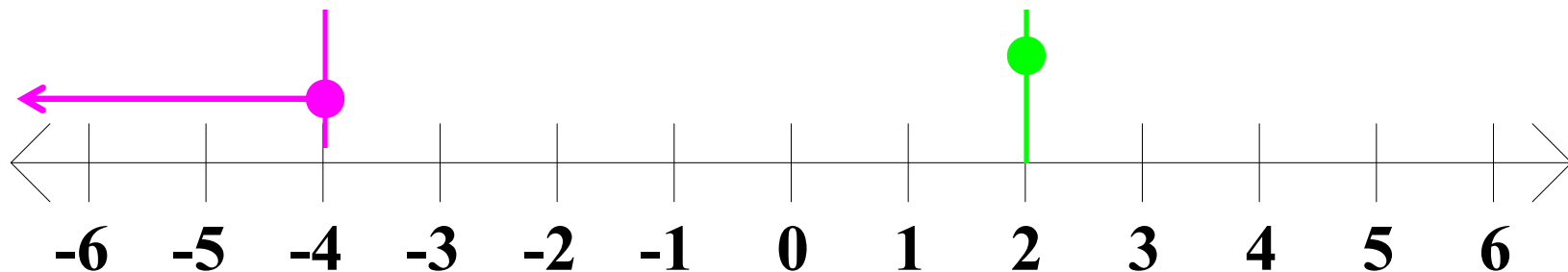
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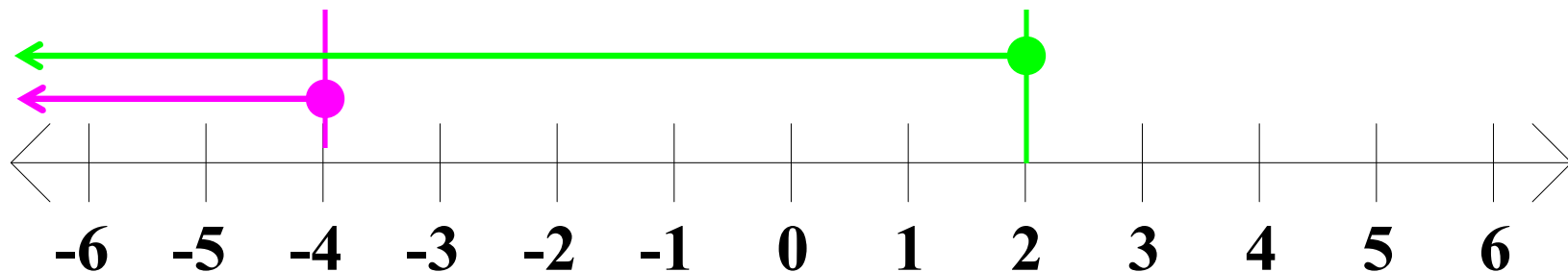
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$$\longleftrightarrow \quad -6 \quad -5 \quad -4 \quad -3 \quad -2 \quad -1 \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6 \quad \longrightarrow$$

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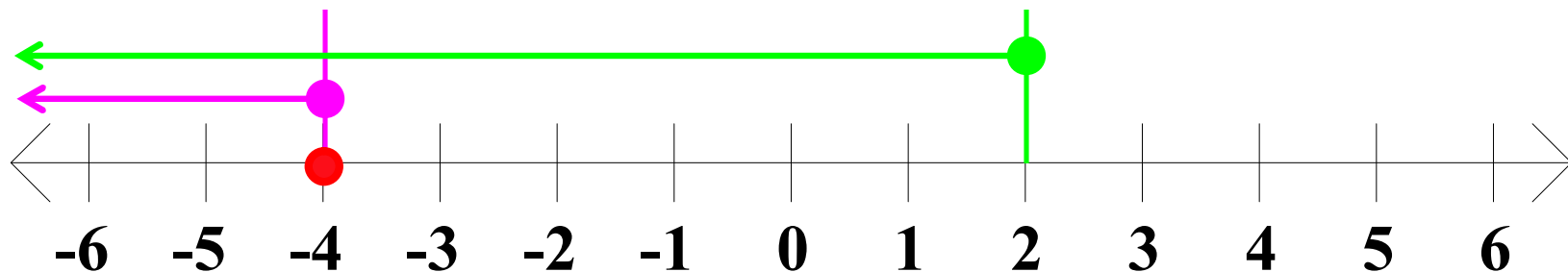
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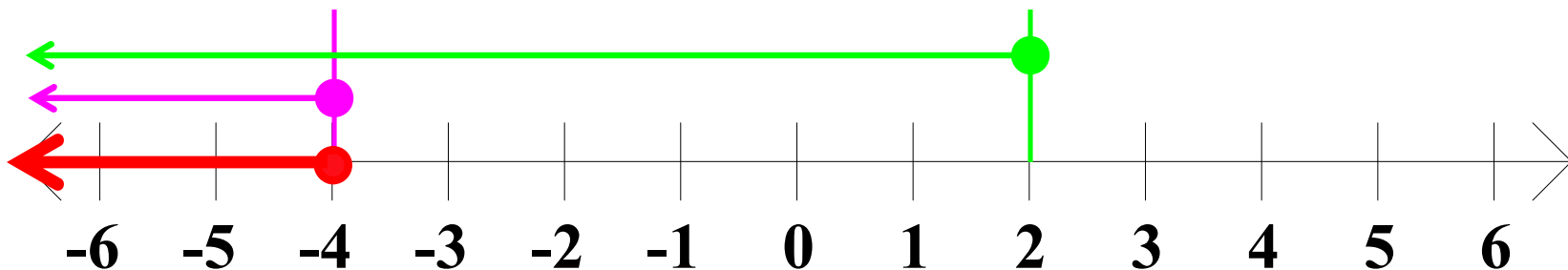
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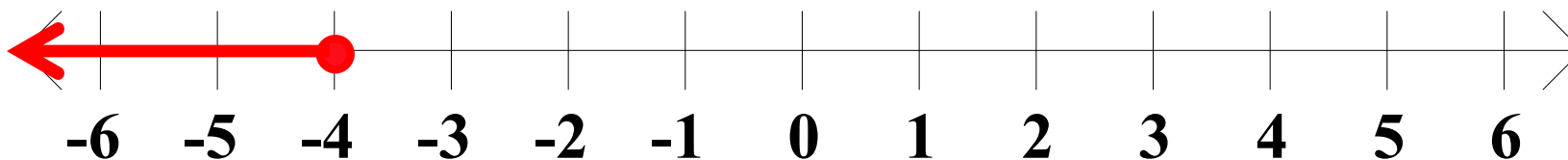
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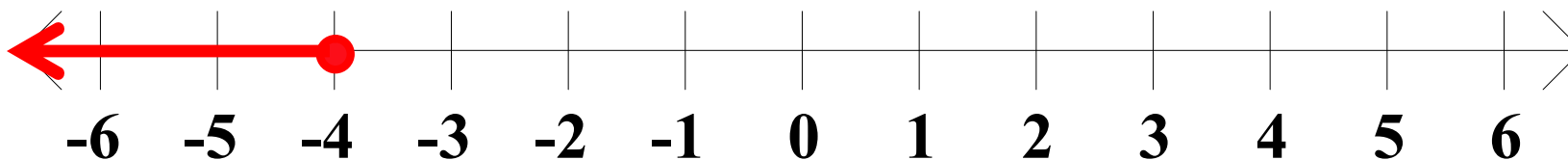
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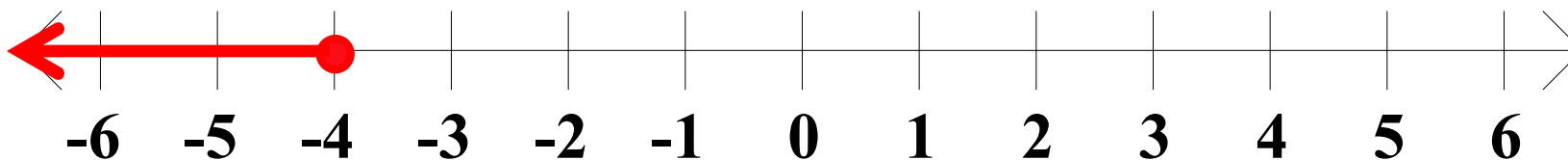Step 3:  Express the final solution in simplest form.

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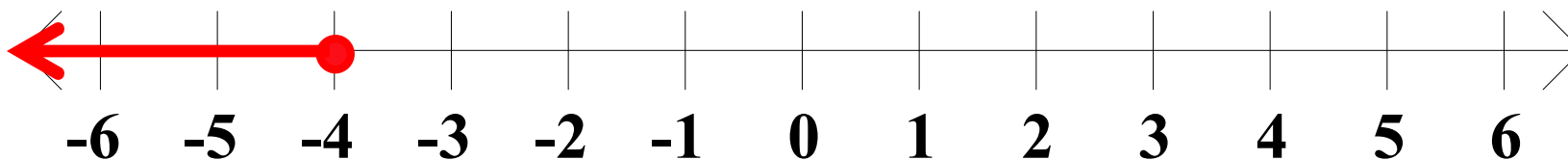Step 3:  Express the final solution in simplest form.

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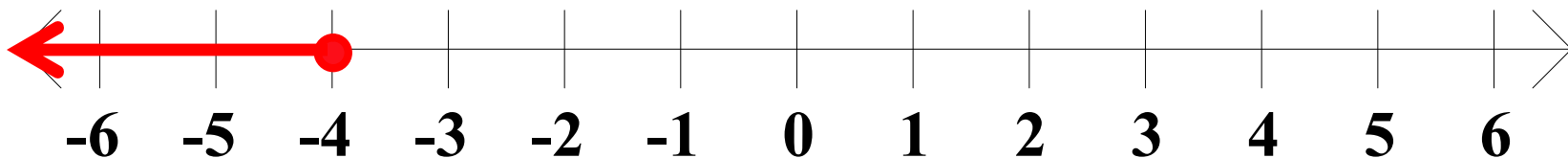
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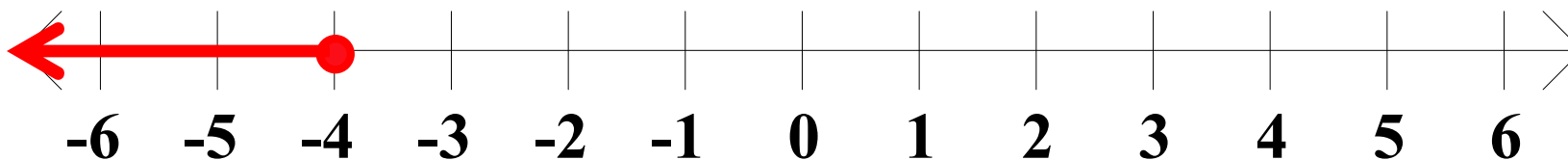Step 3:  Express the final solution in simplest form.

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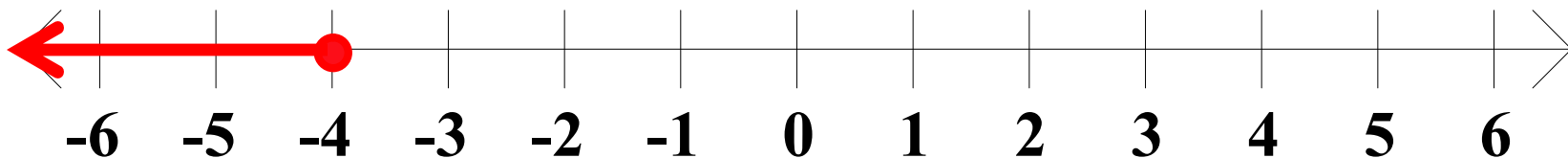Step 3:  Express the final solution in simplest form.

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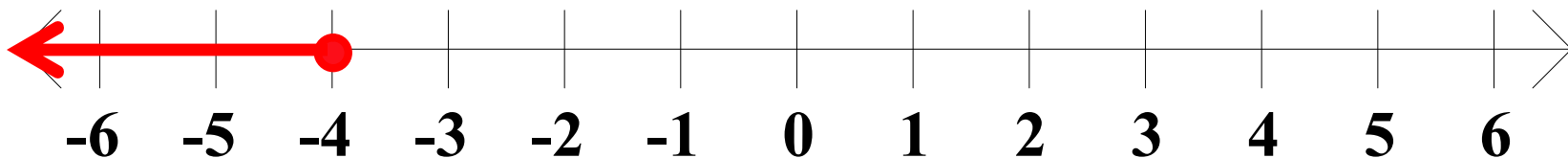
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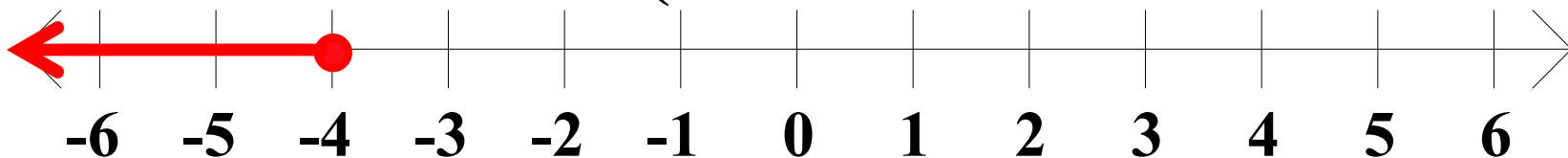
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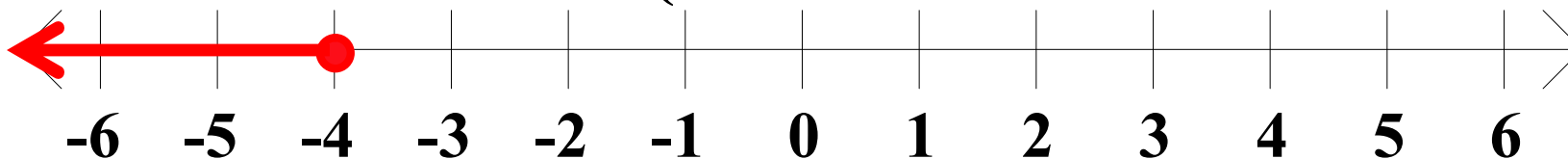as an interval or the union of intervals and sketch its graph.

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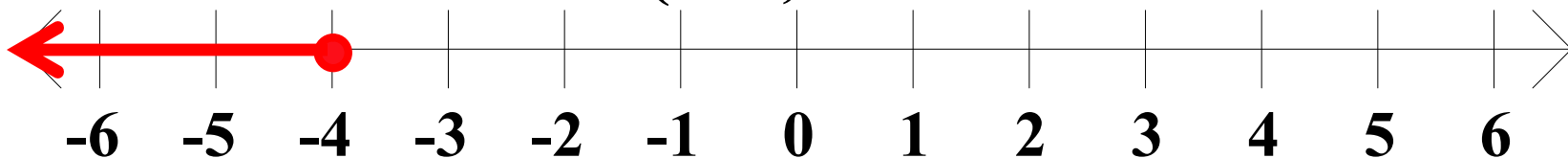
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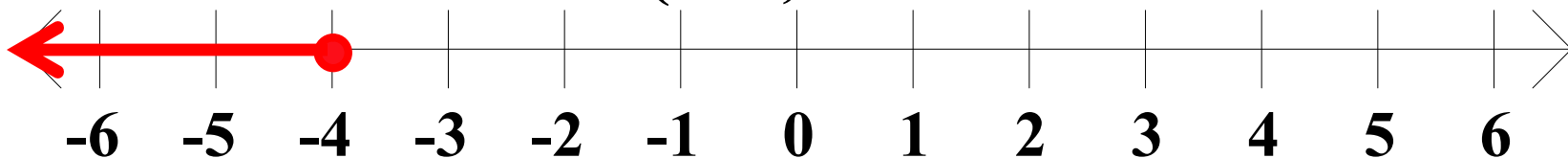
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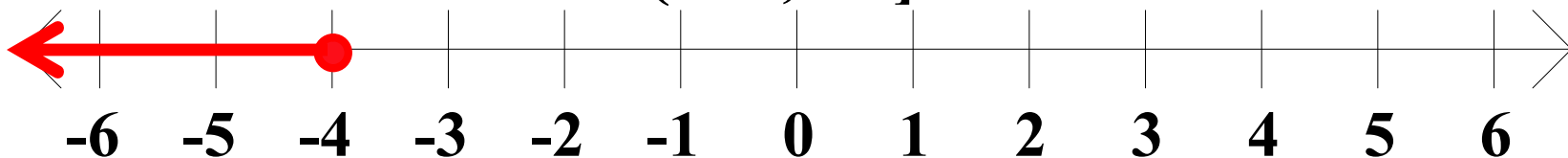
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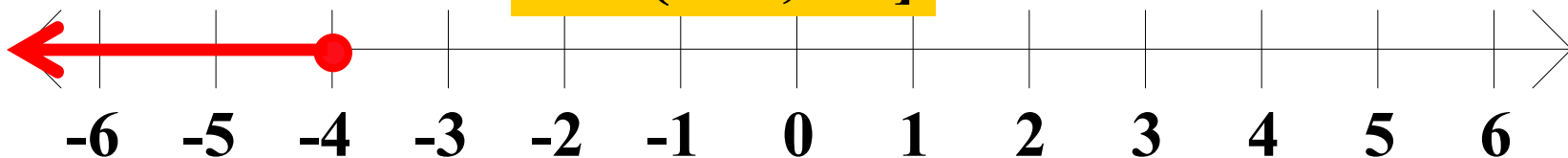
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3.   $x - 1 > 3$  and  $-2x - 5 > 1$

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3.   $x - 1 > 3$  and  $-2x - 5 > 1$

# Algebra II   Class Worksheet #3   Unit 1

**Solving Compound Inequalities  -  Type 1  <u>and</u>**

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# Algebra II   Class Worksheet #3   Unit 1

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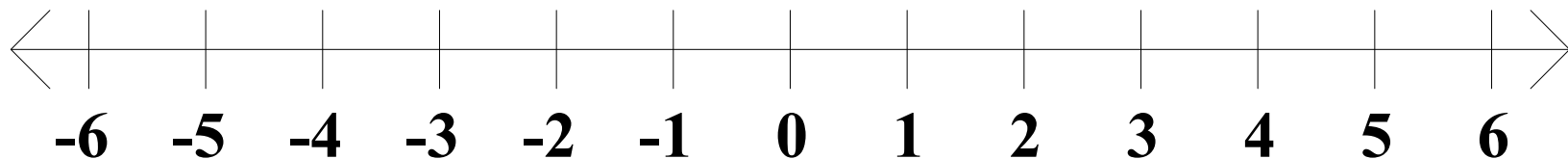
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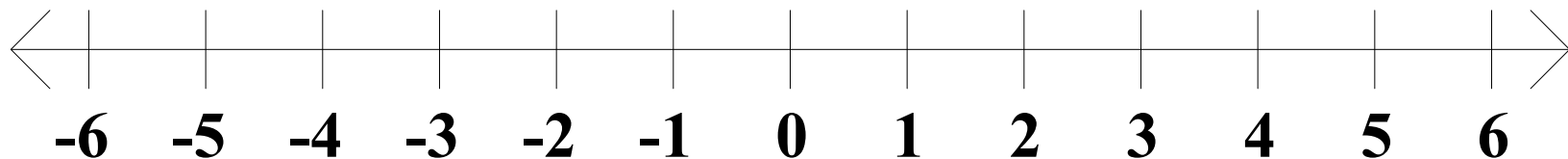
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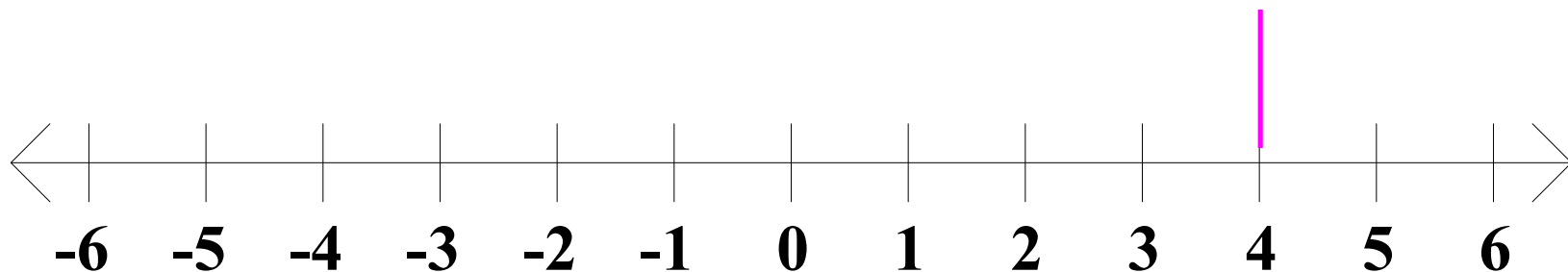
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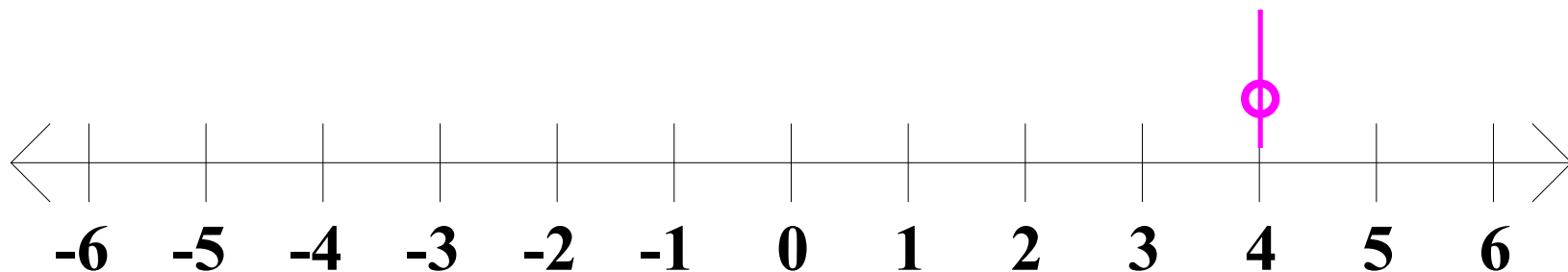
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# Algebra II   Class Worksheet #3   Unit 1

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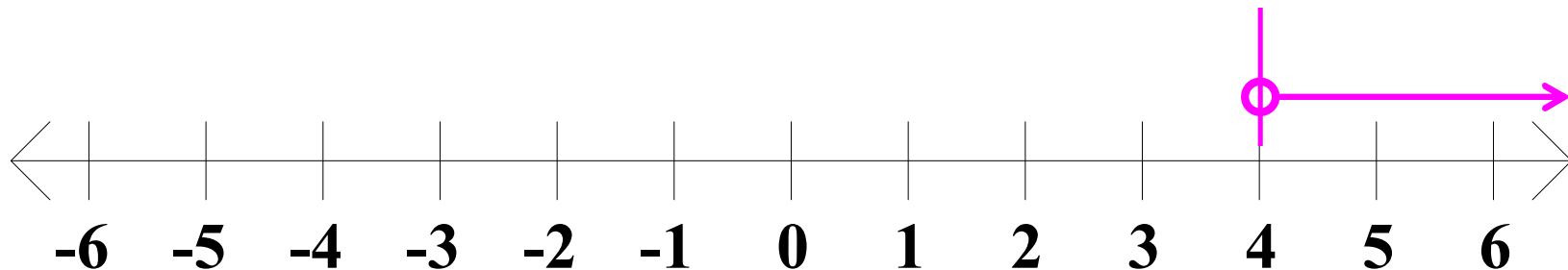
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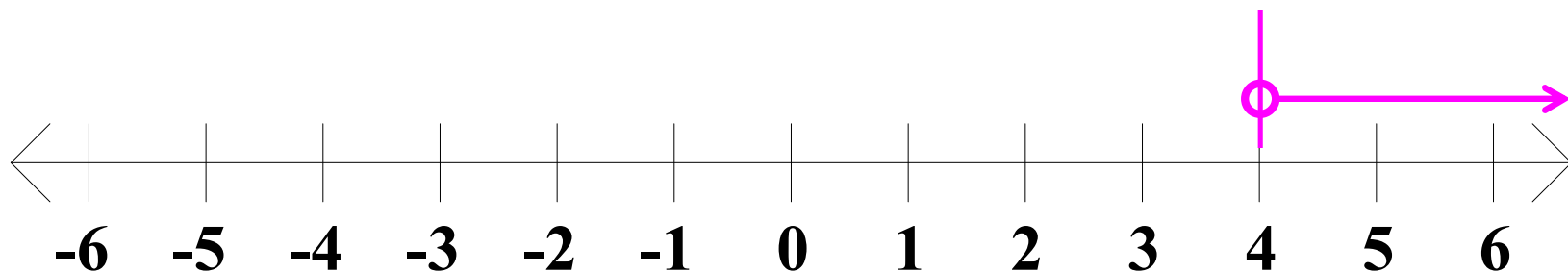
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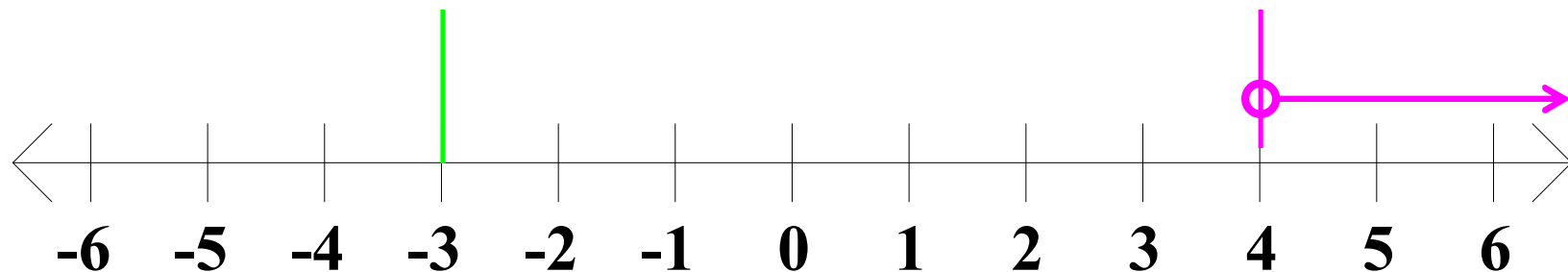
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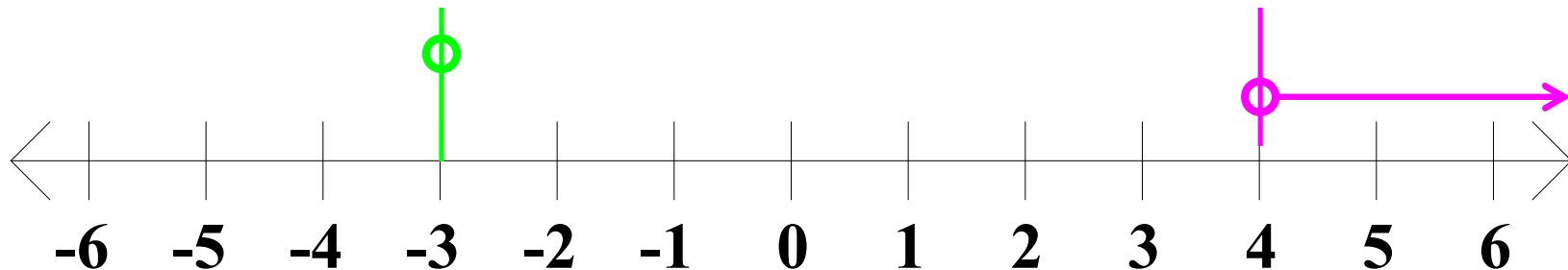
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$$\longleftarrow \; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\;\; | \;\longrightarrow$$

  -6  -5  -4  -3  -2  -1   0   1   2   3   4   5   6

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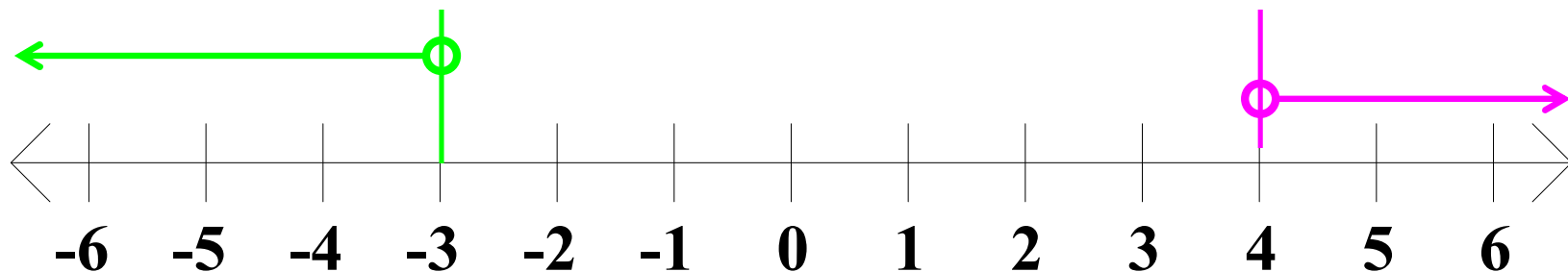
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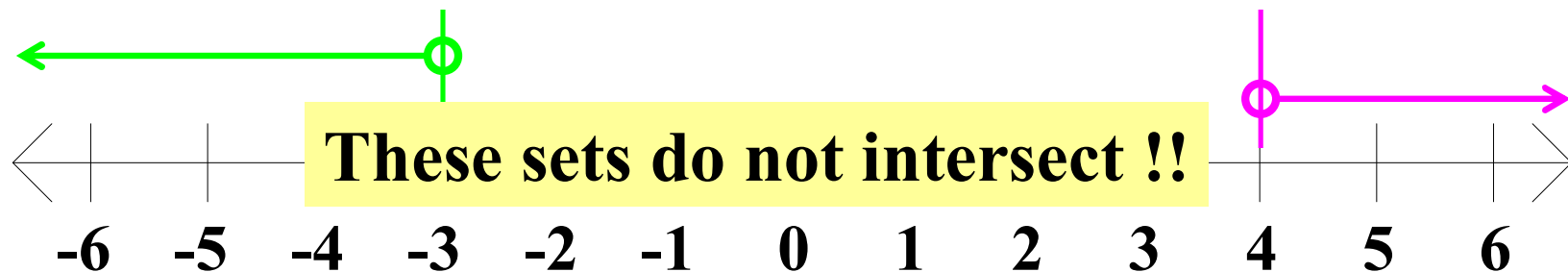
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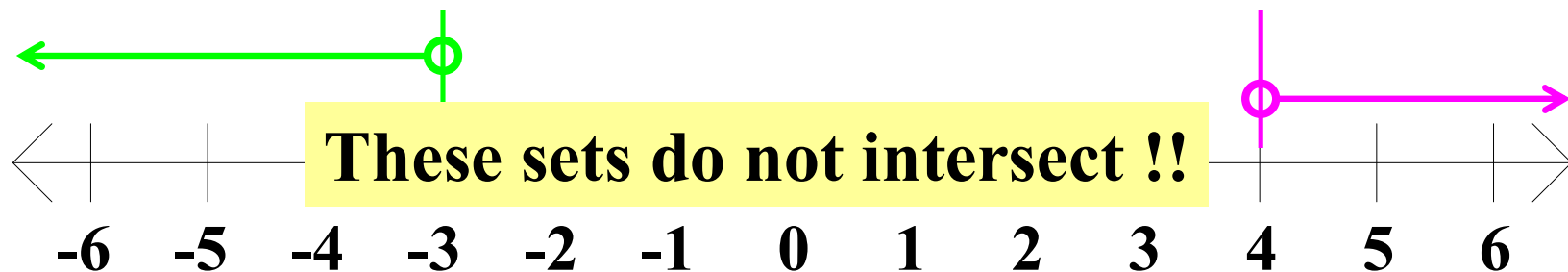
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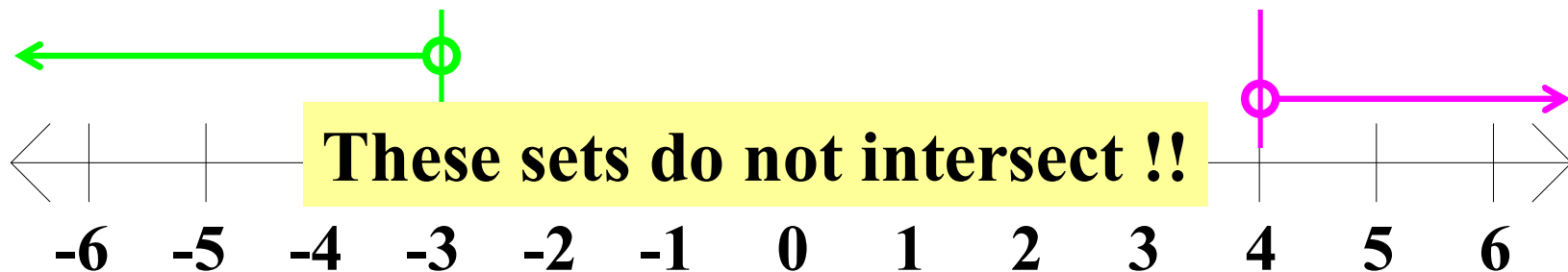
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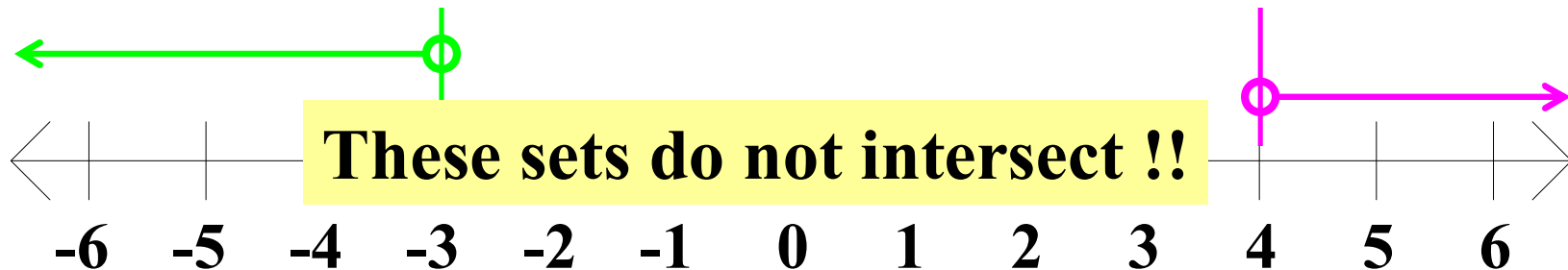
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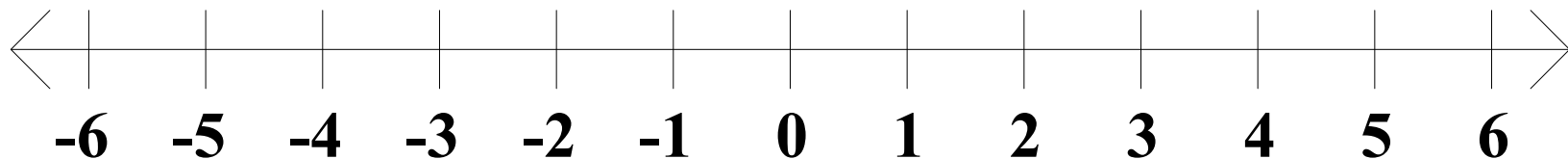Step 3:  Express the final solution in simplest form.

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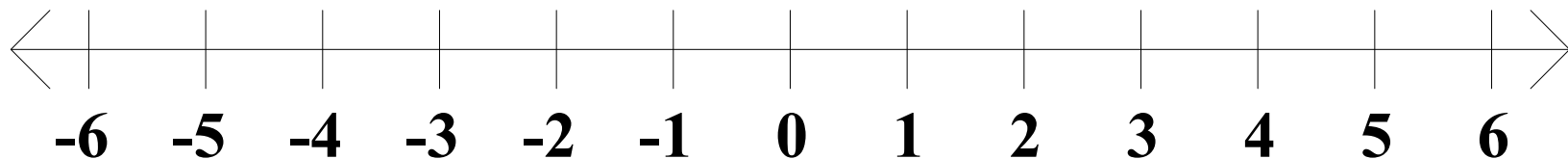
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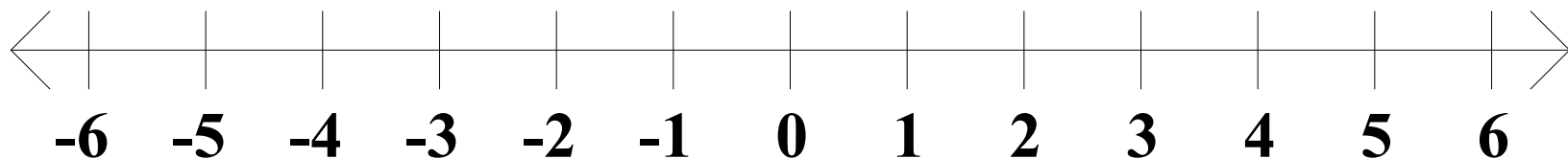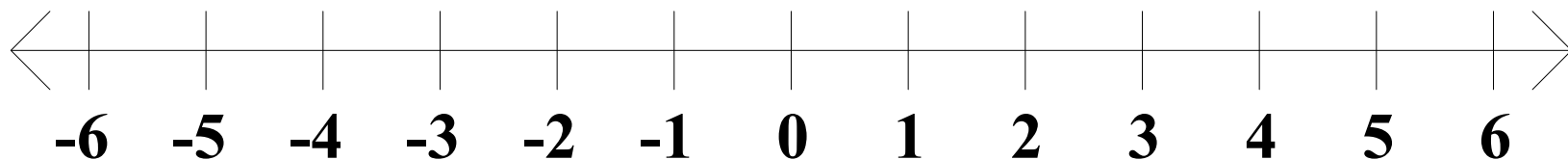
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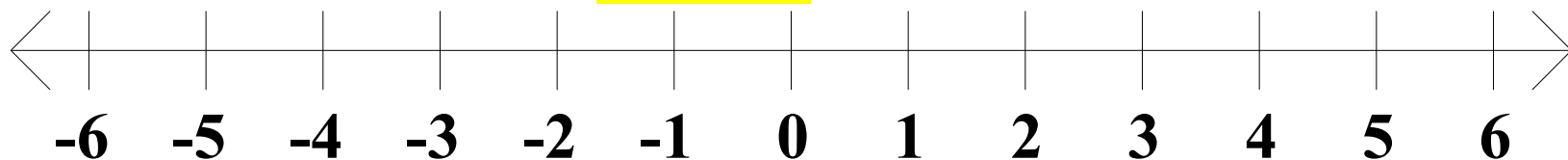as an interval or the union of intervals and sketch its graph.**

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$$\text{-6} \quad \text{-5} \quad \text{-4} \quad \text{-3} \quad \text{-2} \quad \text{-1} \quad 0 \quad 1 \quad 2 \quad 3 \quad 4 \quad 5 \quad 6$$

# Algebra II   Class Worksheet #3   Unit 1

## Solving Compound Inequalities  -  Type 2  <u>or</u>

# Algebra II   Class Worksheet #3   Unit 1

## Solving Compound Inequalities  -  Type 2  <u>or</u>

**Solve each of the following for x.   Represent the solution set as an interval or the union of intervals and sketch its graph.**

4.   $2x + 7 \geq 1$  or  $3x - 2 \geq 10$

# Algebra II   Class Worksheet #3   Unit 1

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# Algebra II   Class Worksheet #3   Unit 1

## Solving Compound Inequalities  -  Type 2  <u>or</u>
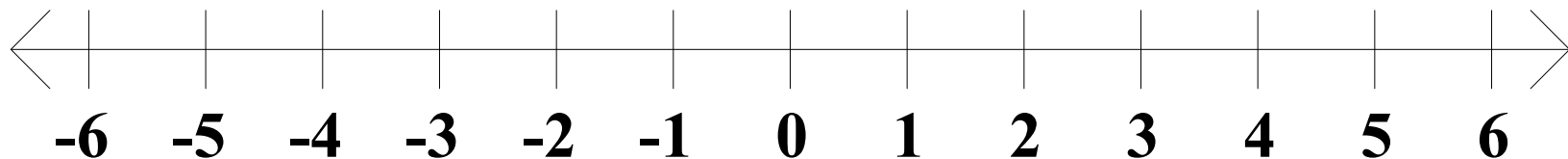### Step 1:  Solve each basic inequality.

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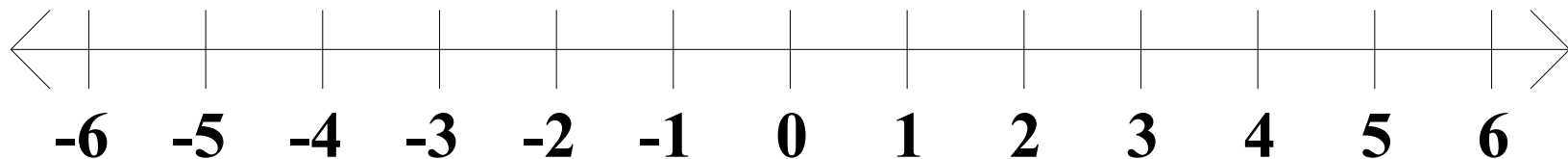
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# Algebra II   Class Worksheet #3   Unit 1

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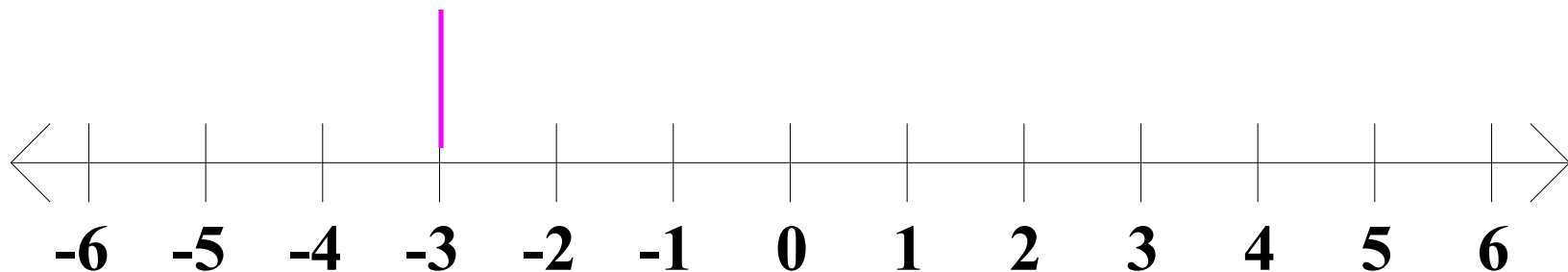### Step 1:  Solve each basic inequality.

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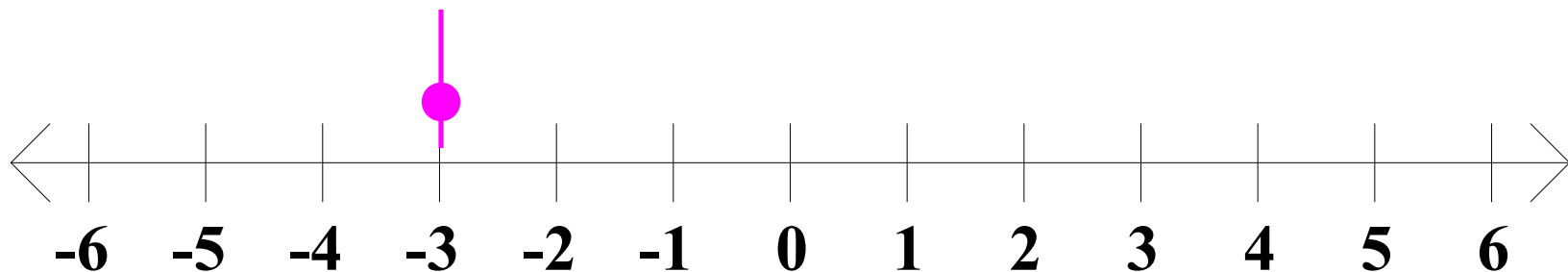
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# Algebra II   Class Worksheet #3   Unit 1

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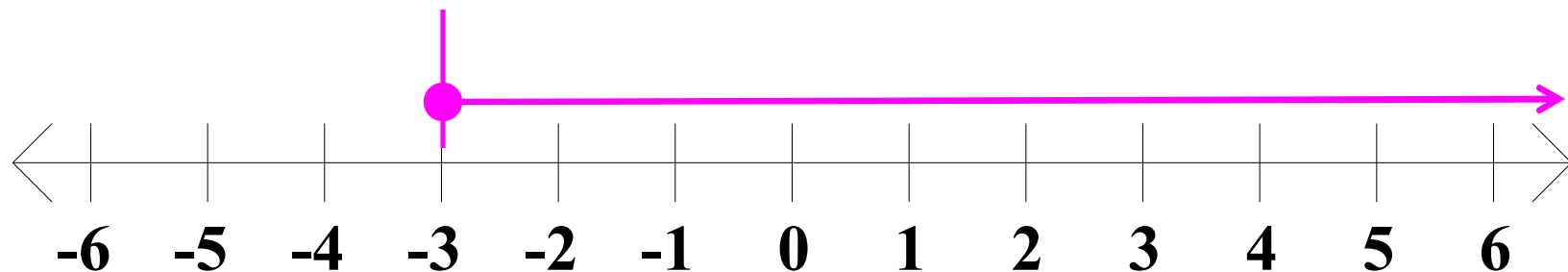**Step 1:  Solve each basic inequality.**

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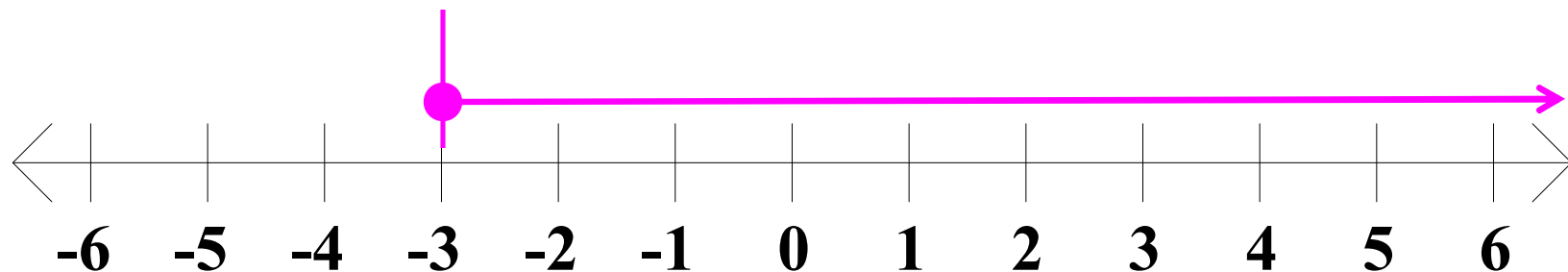**Solve each of the following for x.   Represent the solution set as an interval or the union of intervals and sketch its graph.**

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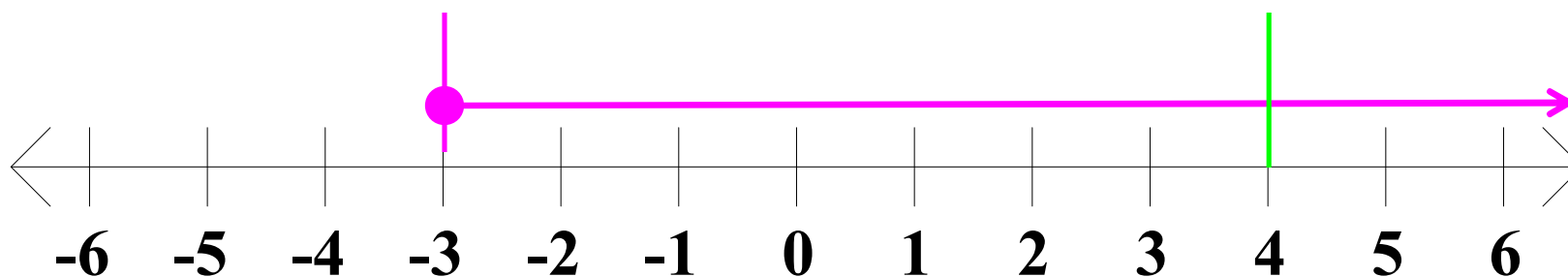    Step 1:  Solve each basic inequality.
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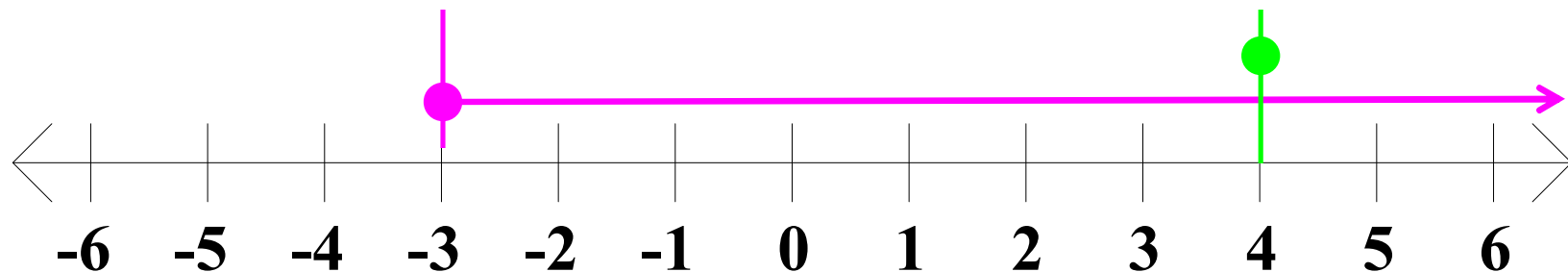as an interval or the union of intervals and sketch its graph.

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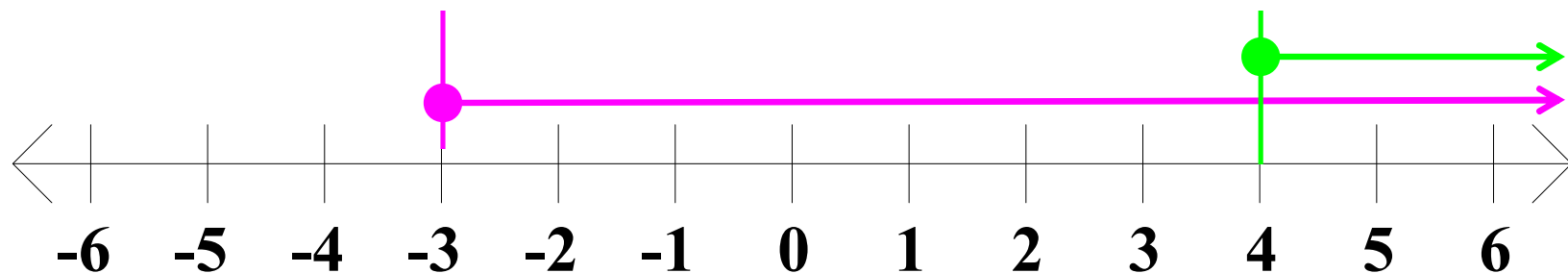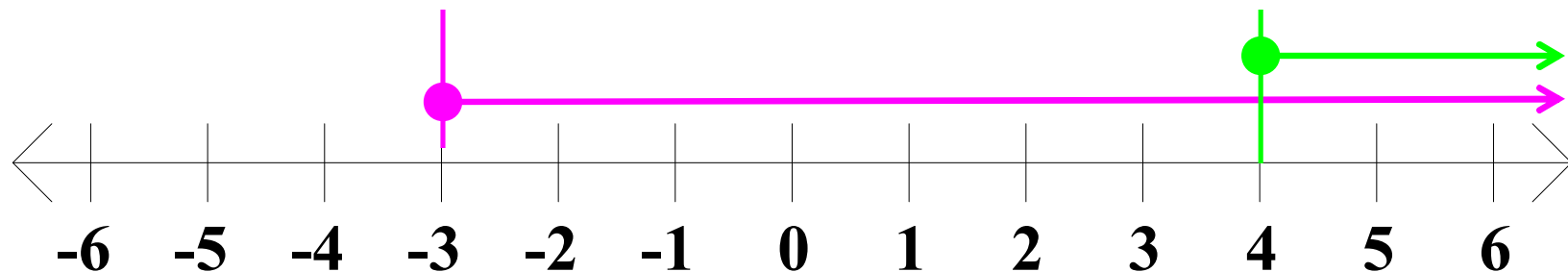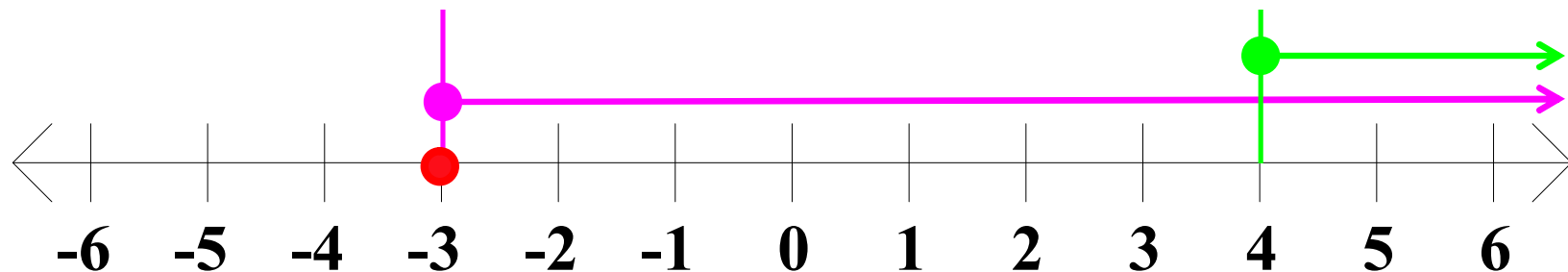
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 <----+----+----+----+----+----+----+----+----+----+----+----+---->
     -6   -5   -4   -3   -2   -1    0    1    2    3    4    5    6
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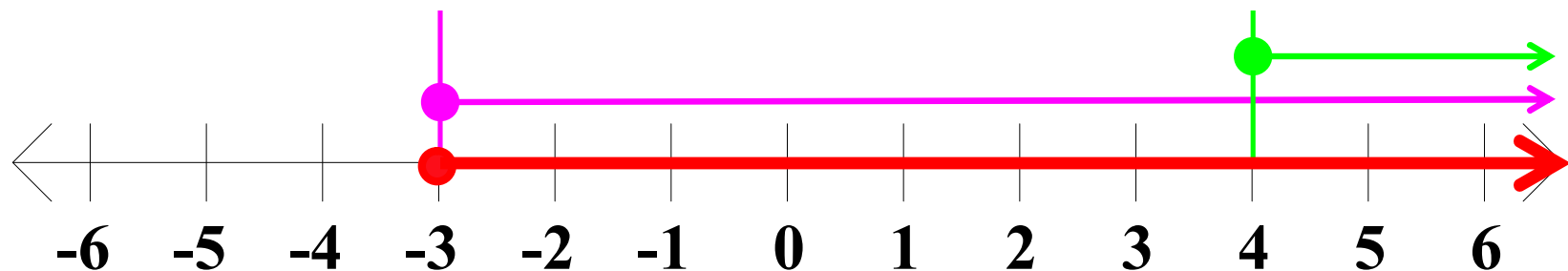   Step 1:  Solve each basic inequality.
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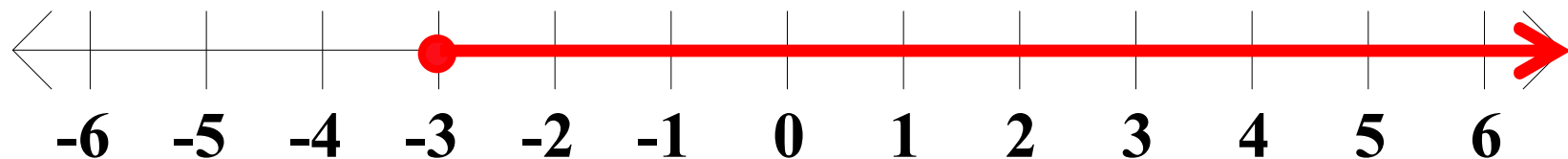
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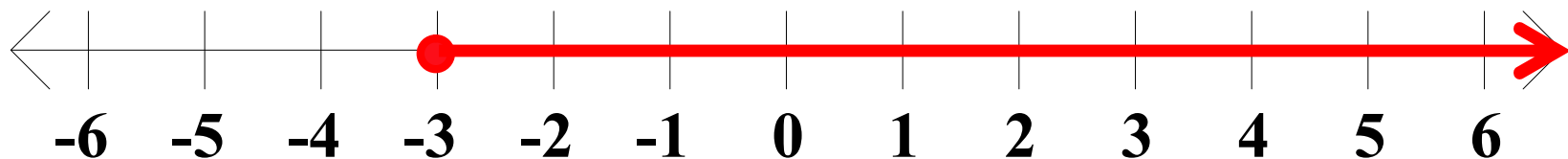'<u>union</u>' of the solution sets of the basic inequalities.**

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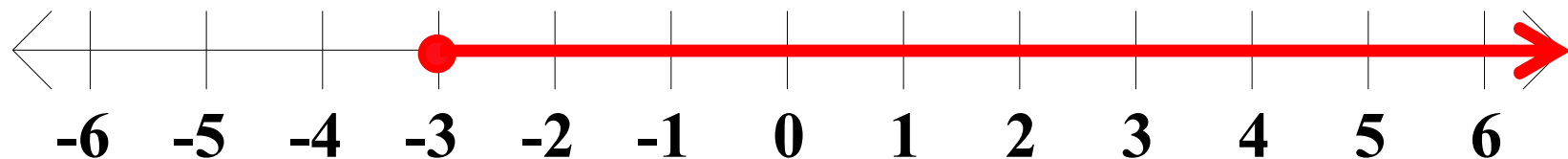'<u>union</u>' of the solution sets of the basic inequalities.

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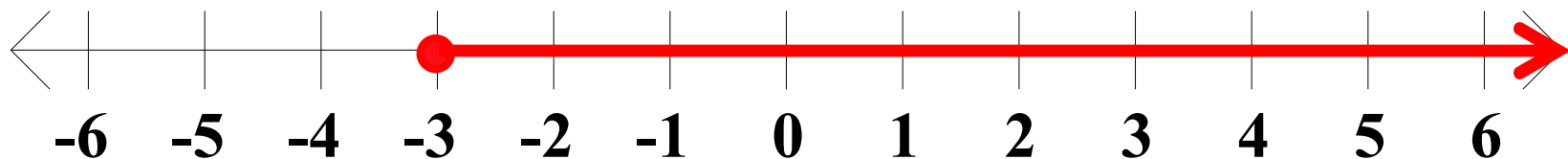
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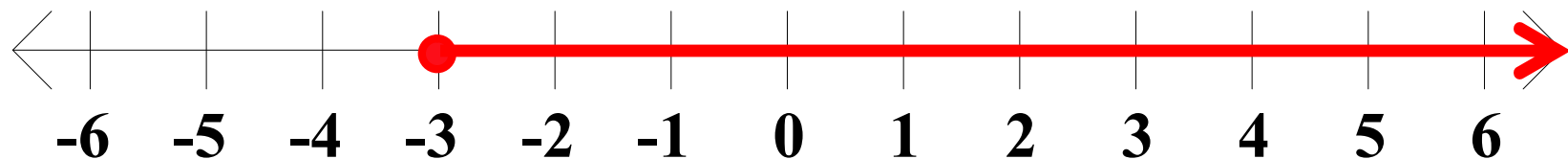
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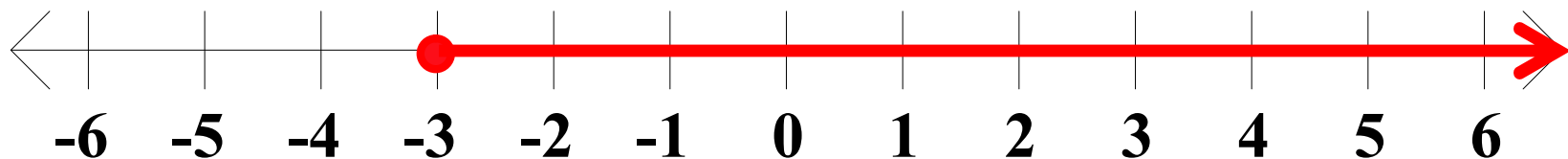Step 2:  The solution set of the compound inequality is the ‘<u>union</u>’ of the solution sets of the basic inequalities.

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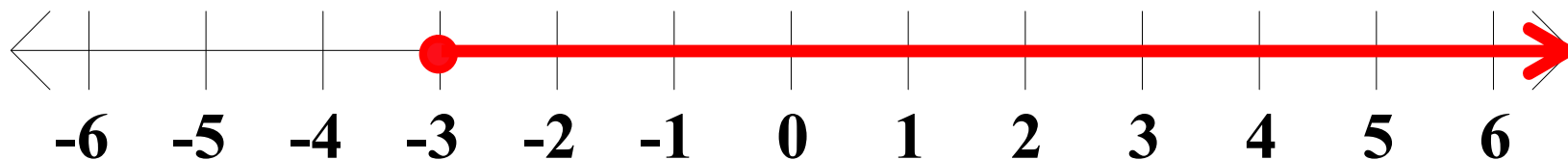Step 3:  Express the final solution in simplest form.

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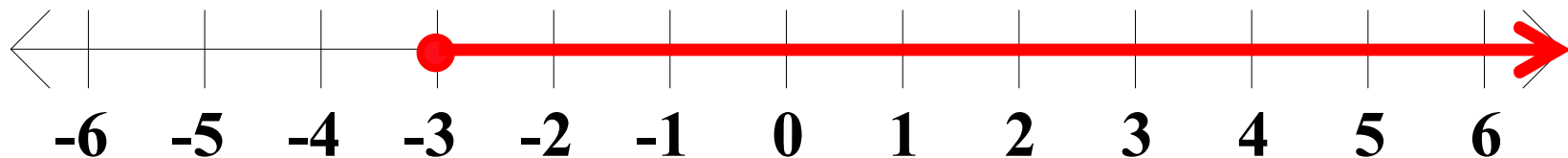
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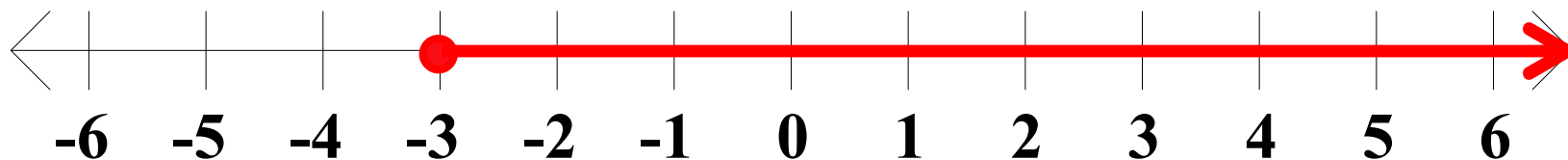
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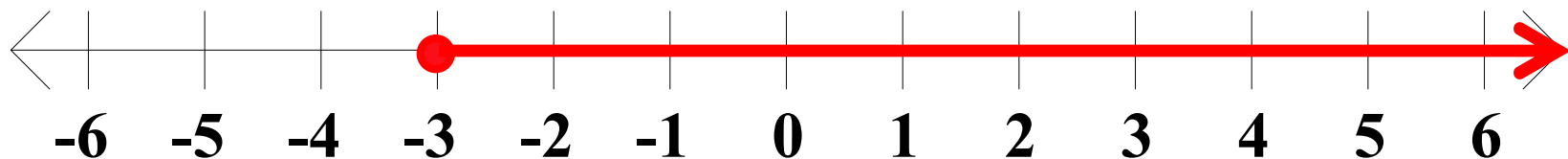
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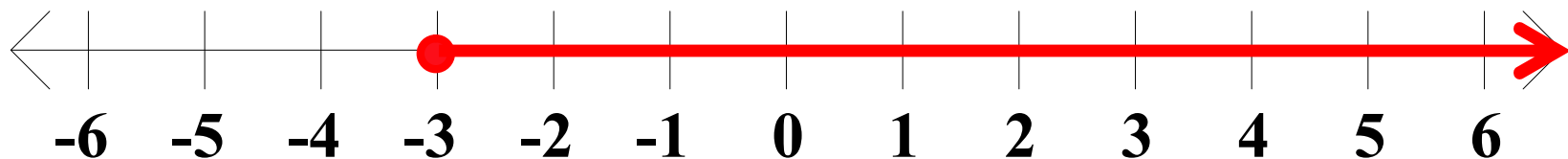
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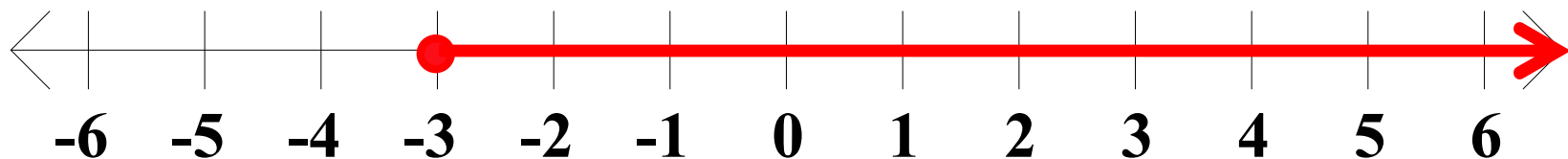
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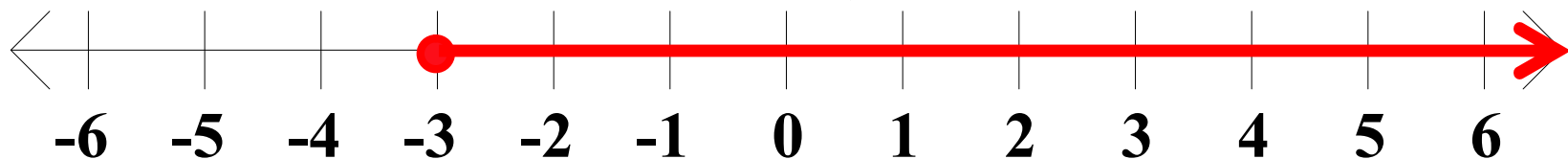
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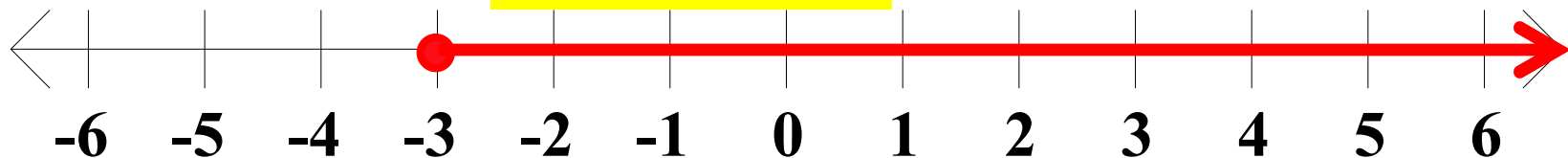
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4.   $2x + 7 \geq 1$  or  $3x - 2 \geq 10$

$$2x \geq -6 \qquad\qquad 3x \geq 12$$

$$x \geq -3 \qquad \underline{or} \qquad x \geq 4$$

$$x \geq -3$$

$$S = [\, -3 \,, \, \infty$$

# Algebra II   Class Worksheet #3   Unit 1

Solving Compound Inequalities  -  Type 2  <u>or</u>

Step 1:  Solve each basic inequality.

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# Algebra II   Class Worksheet #3   Unit 1

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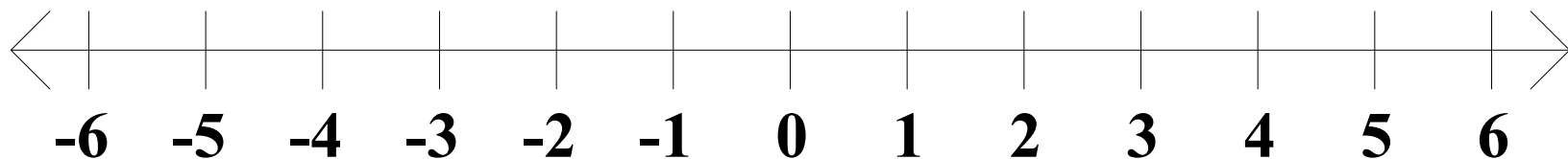Step 3:  Express the final solution in simplest form.

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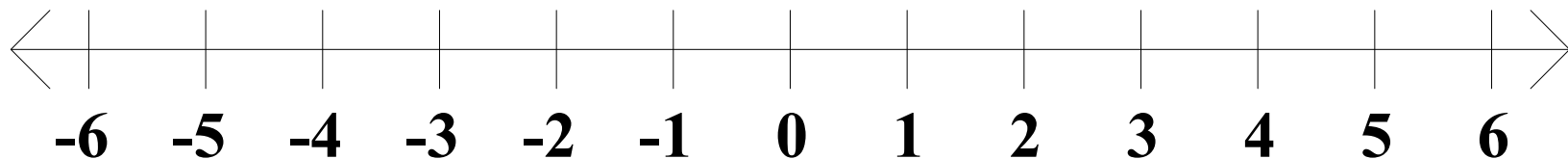Step 3:  Express the final solution in simplest form.

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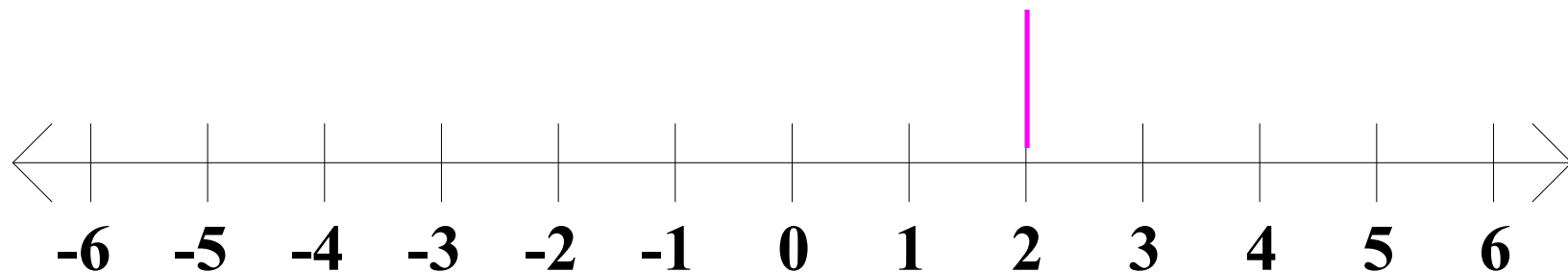
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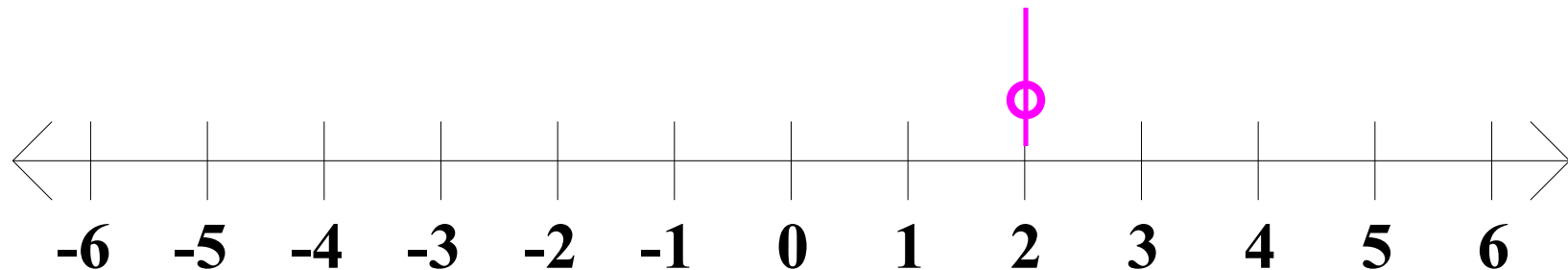Step 3:  Express the final solution in simplest form.

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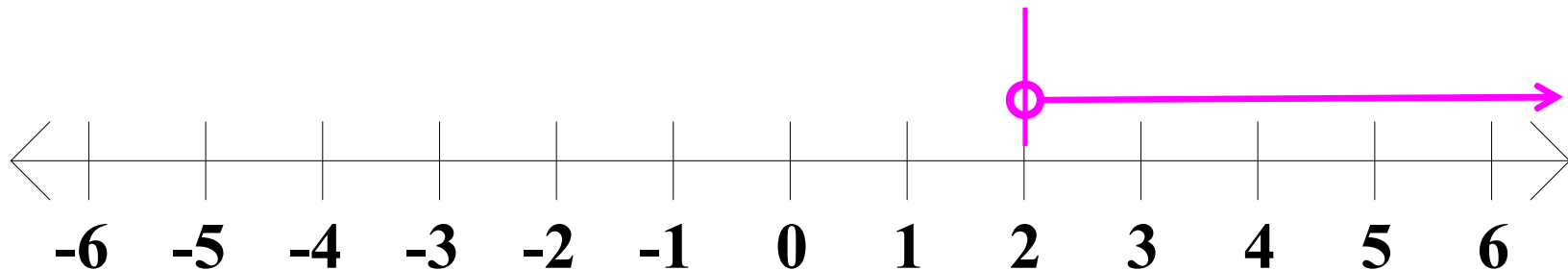
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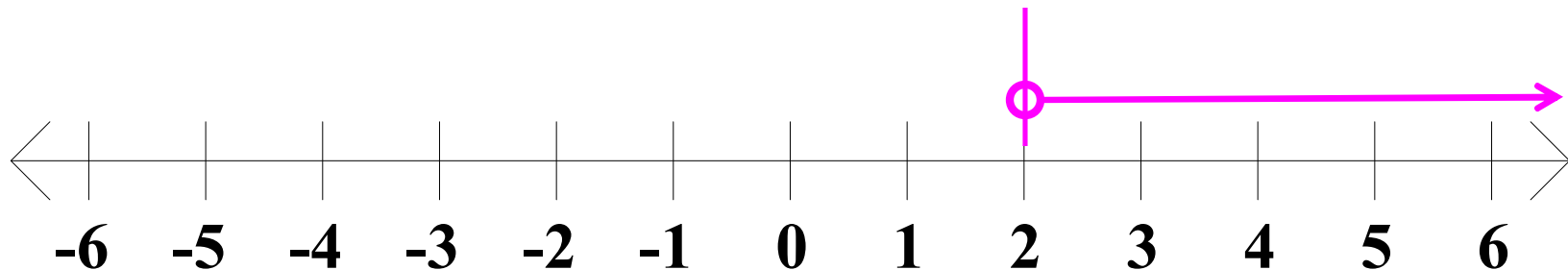
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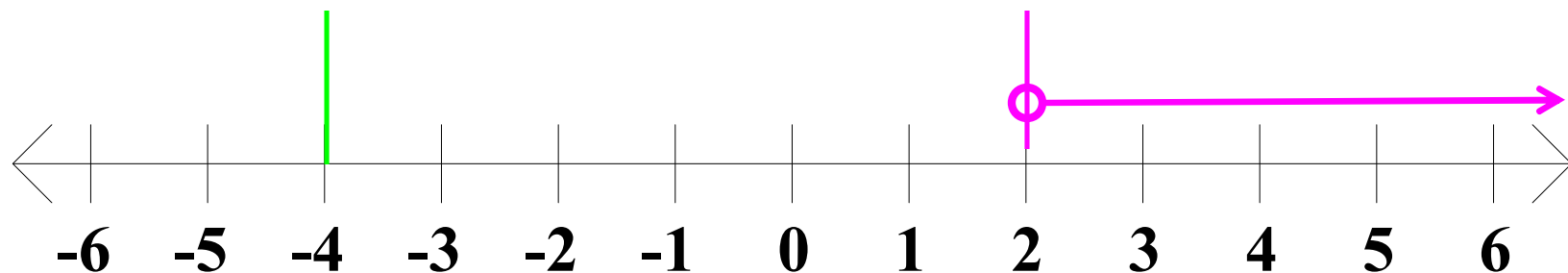
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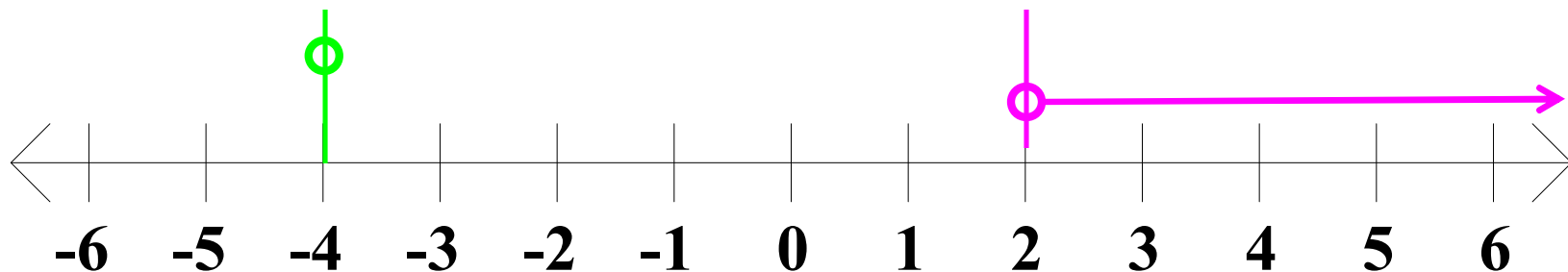
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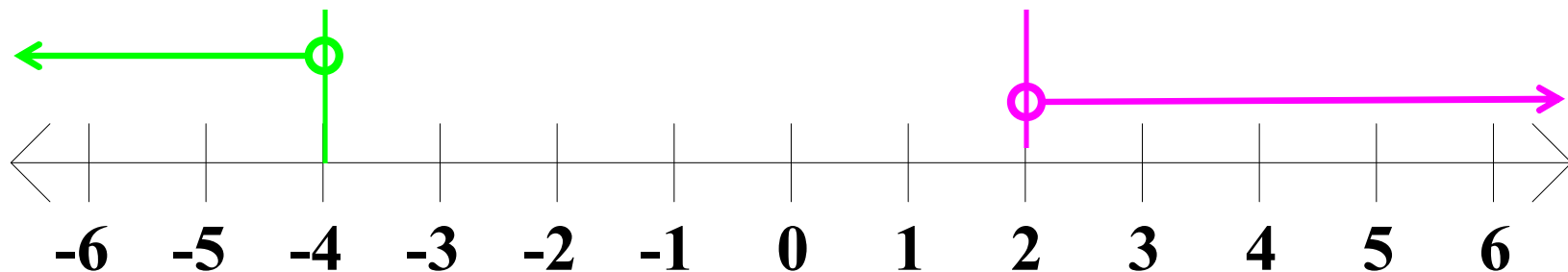Step 3:  Express the final solution in simplest form.

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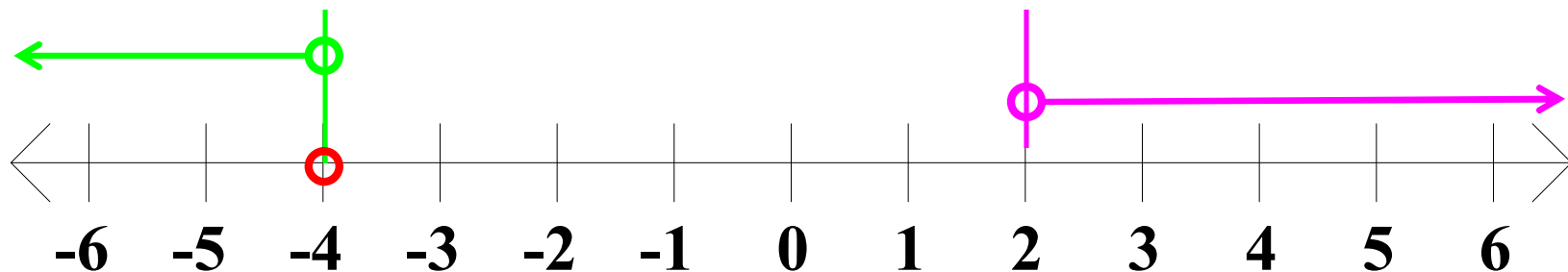
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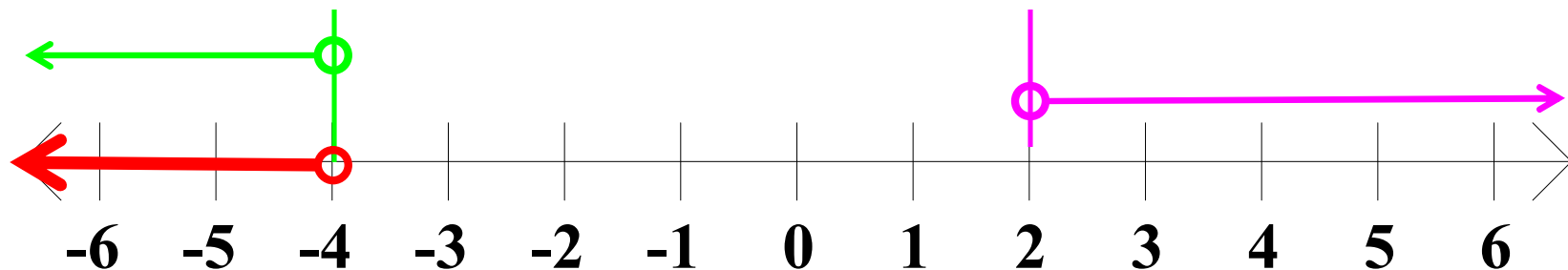
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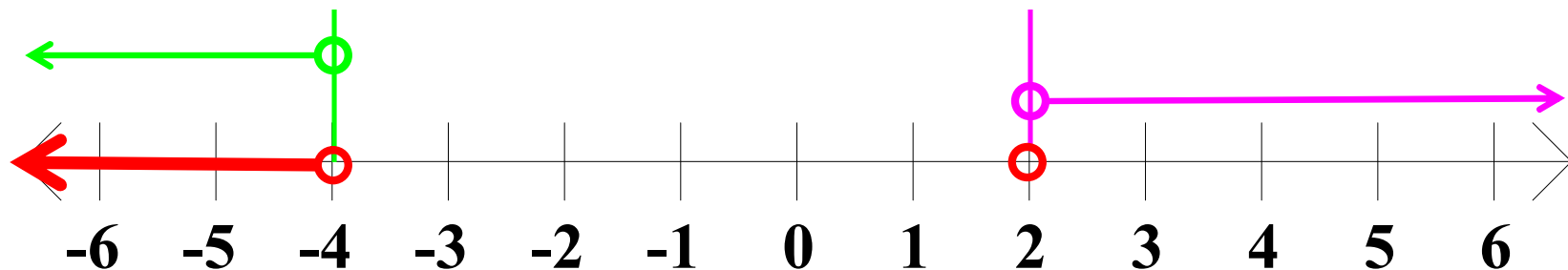
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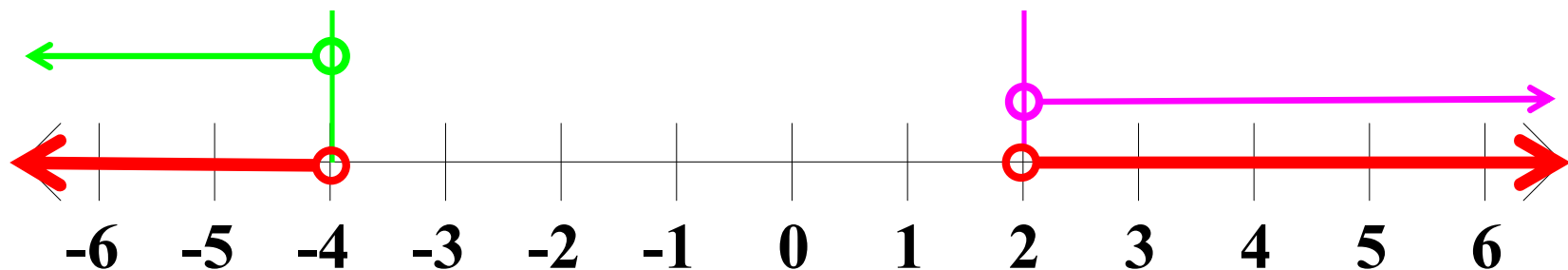Step 3:  Express the final solution in simplest form.

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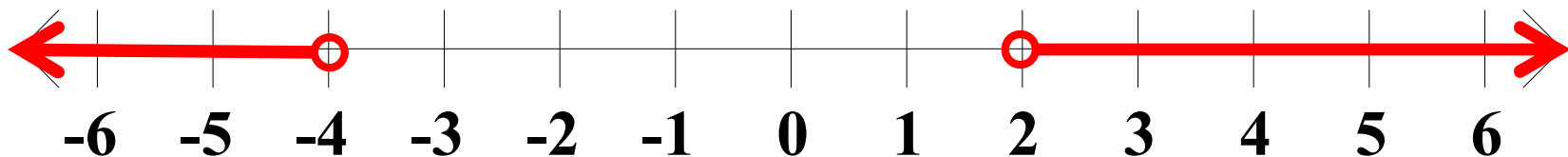
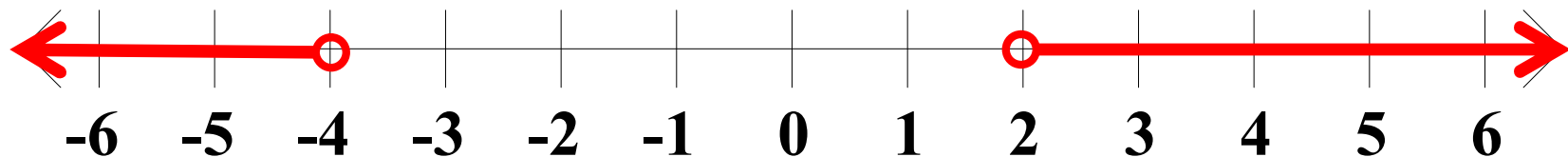Step 3:  Express the final solution in simplest form.

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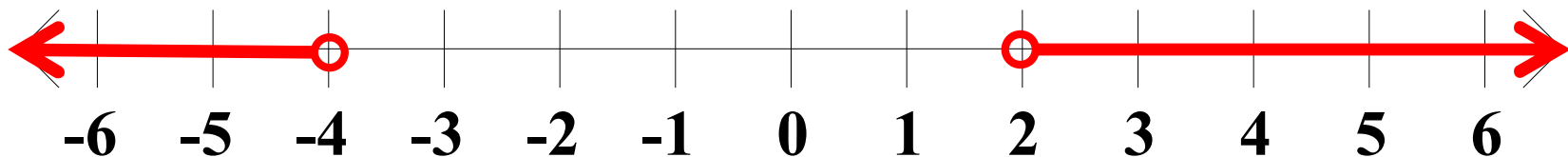Step 3:  Express the final solution in simplest form.

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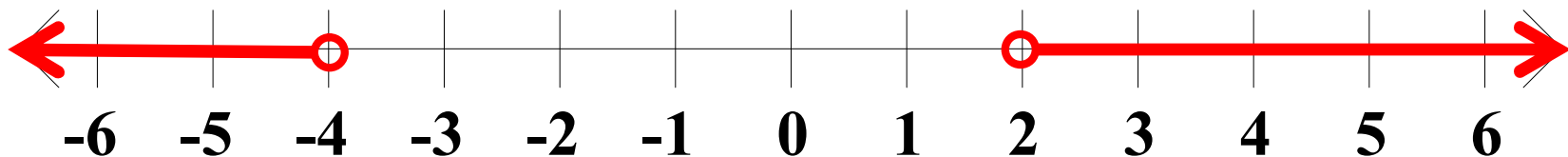
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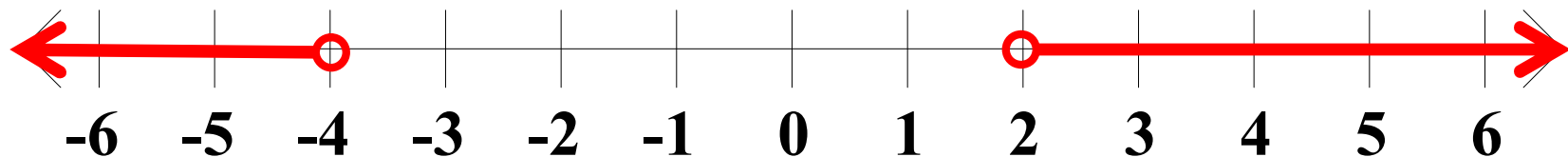
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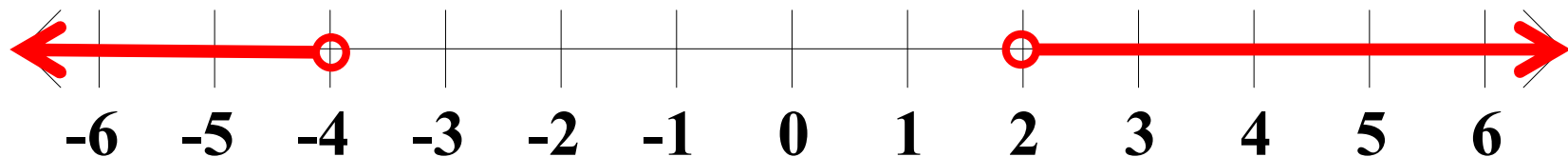
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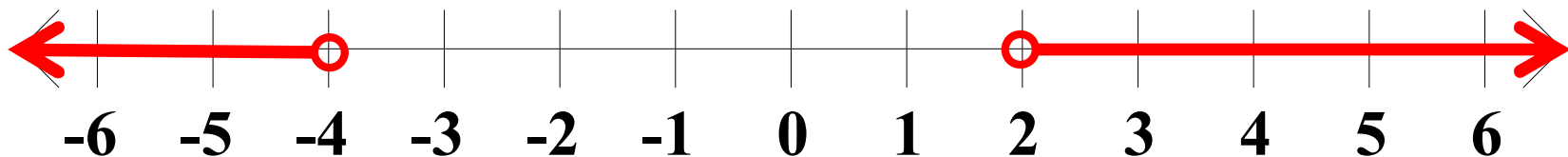Step 3:  Express the final solution in simplest form.

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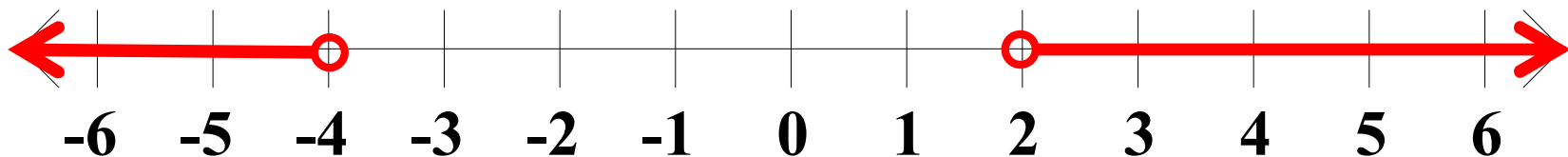
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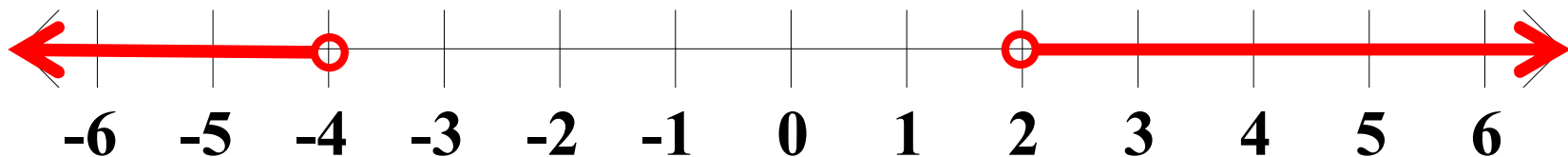
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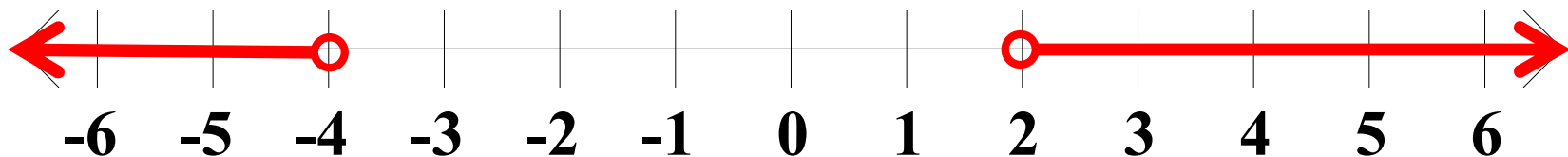  Step 3:  Express the final solution in simplest form.

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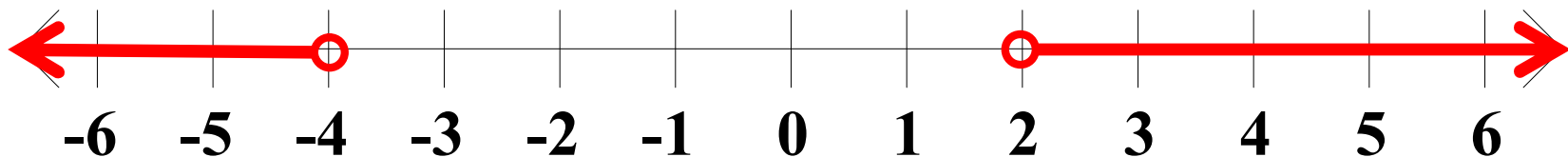   Step 3:  Express the final solution in simplest form.

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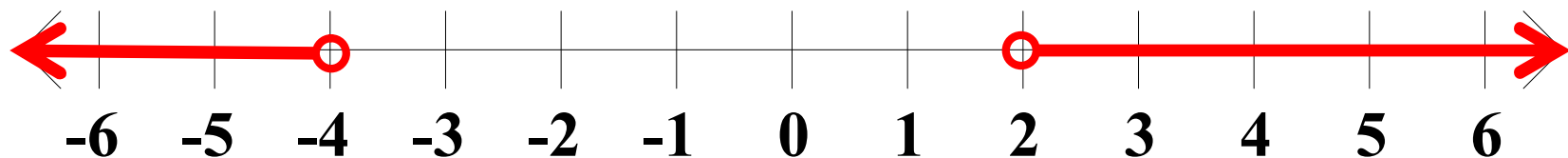
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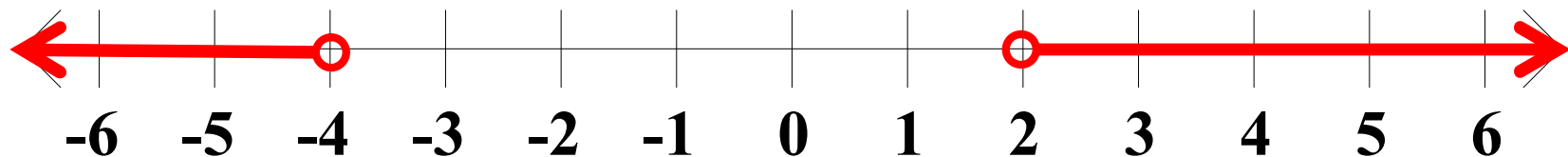Step 3:  Express the final solution in simplest form.

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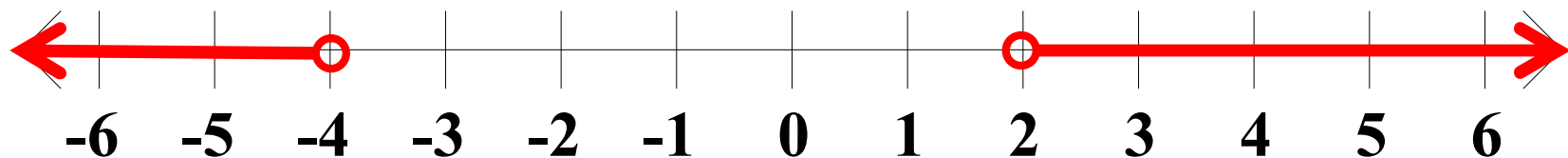
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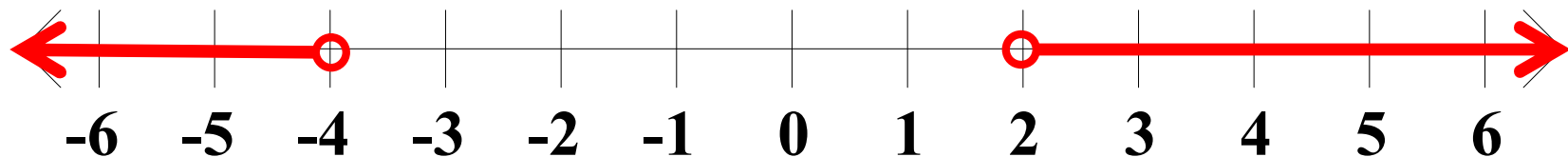Step 3:  Express the final solution in simplest form.

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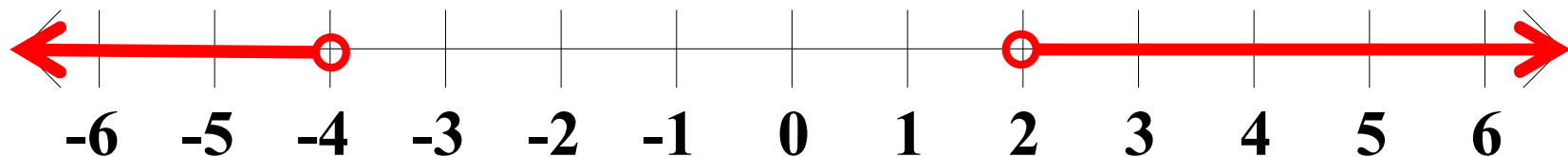
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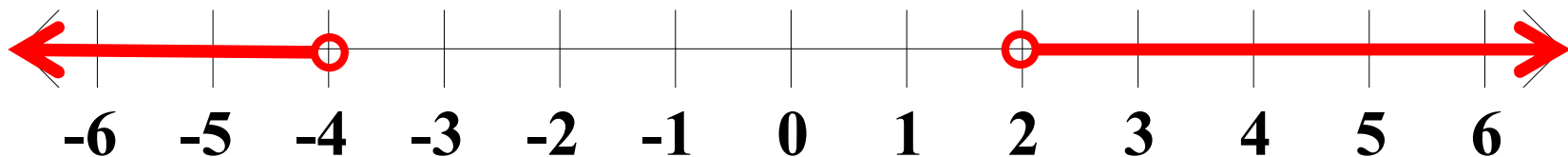Step 3:  Express the final solution in simplest form.

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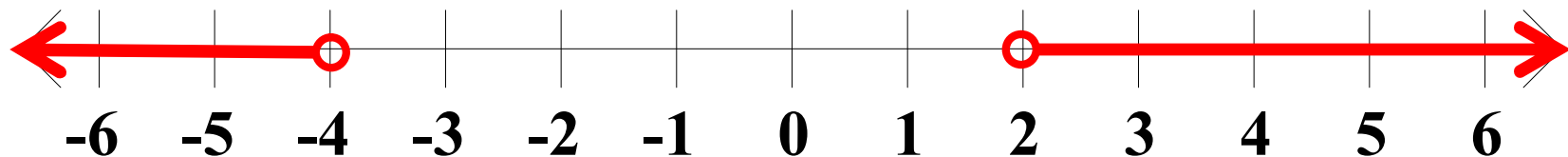
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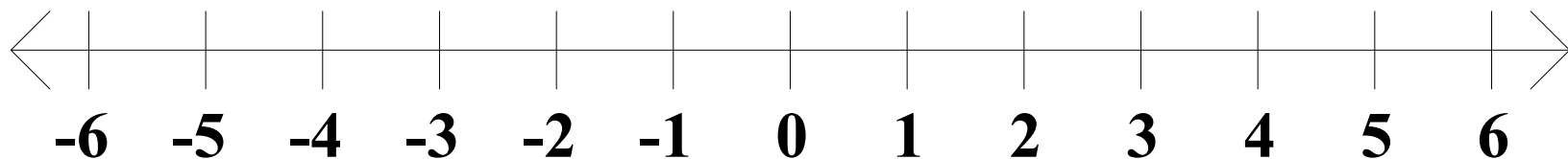
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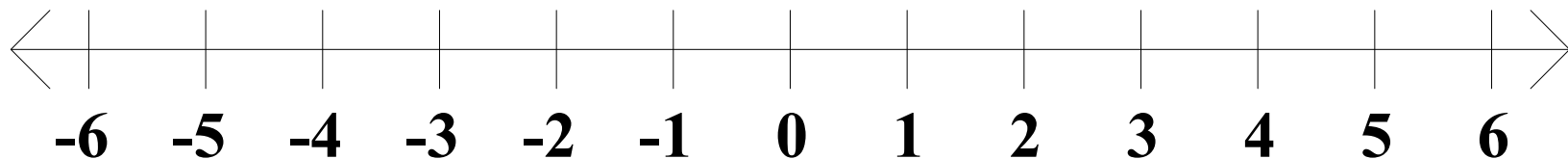Step 3:  Express the final solution in simplest form.

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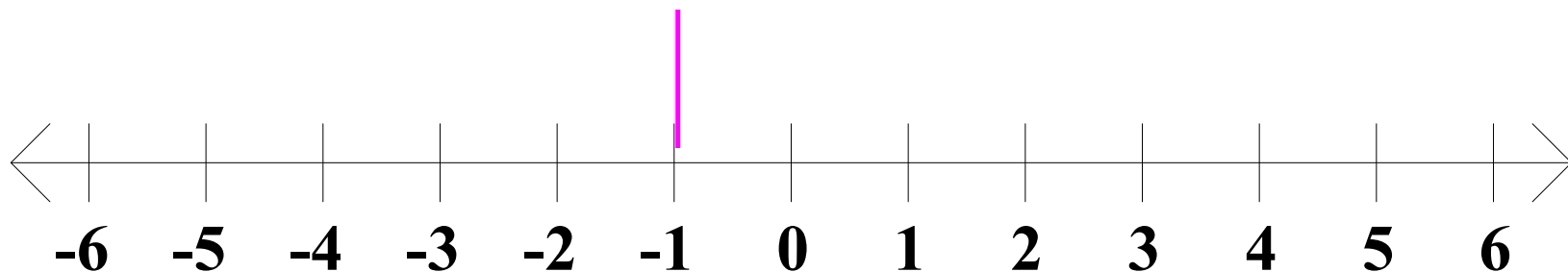
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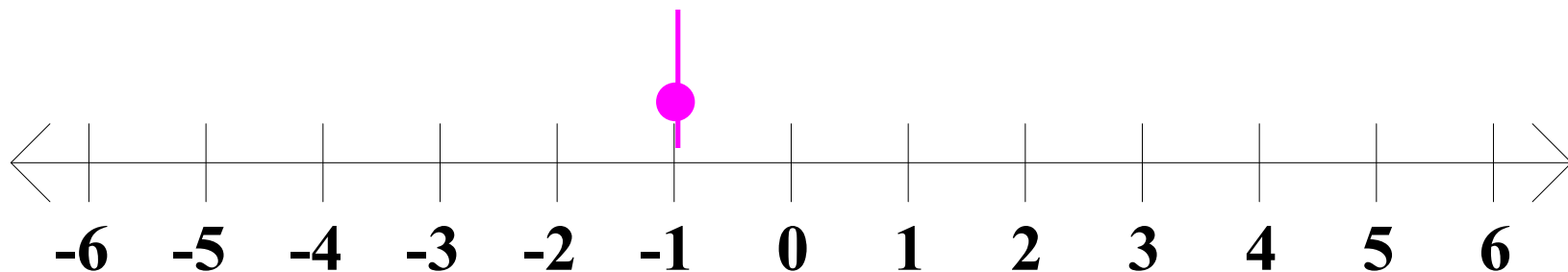
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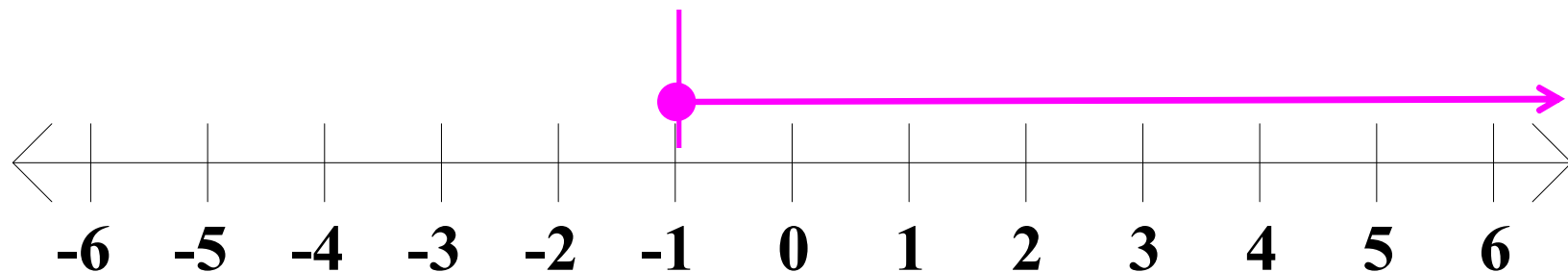
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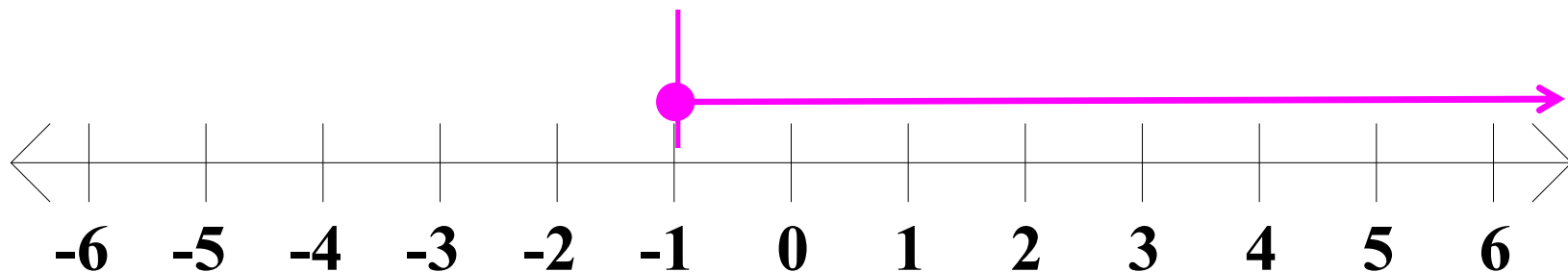
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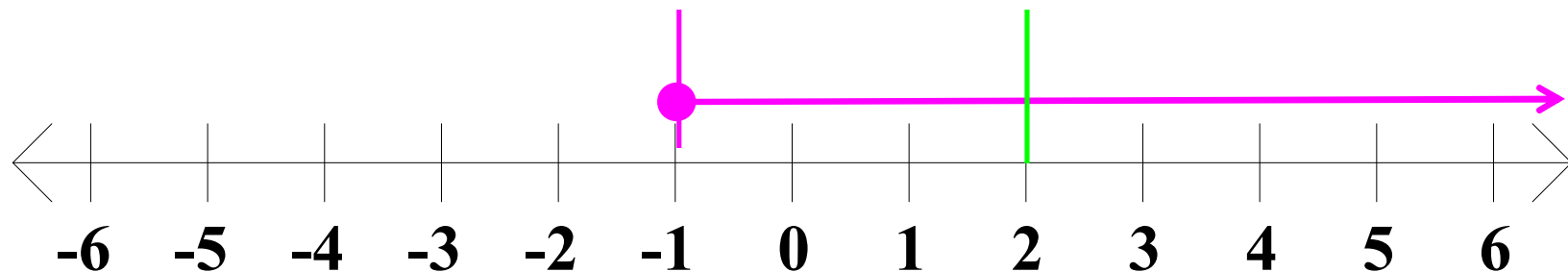Step 3:  Express the final solution in simplest form.

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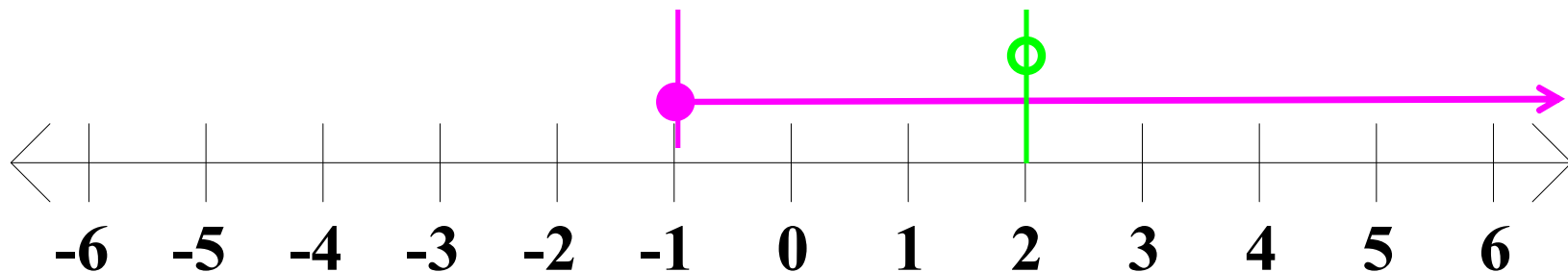
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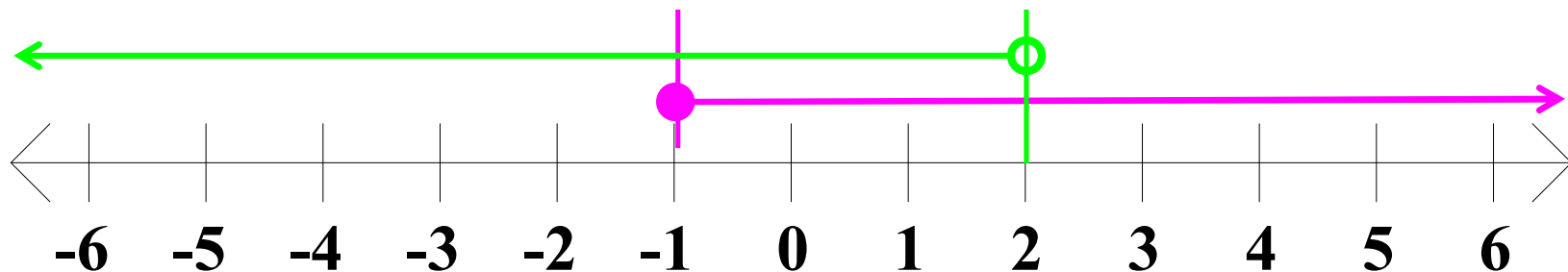
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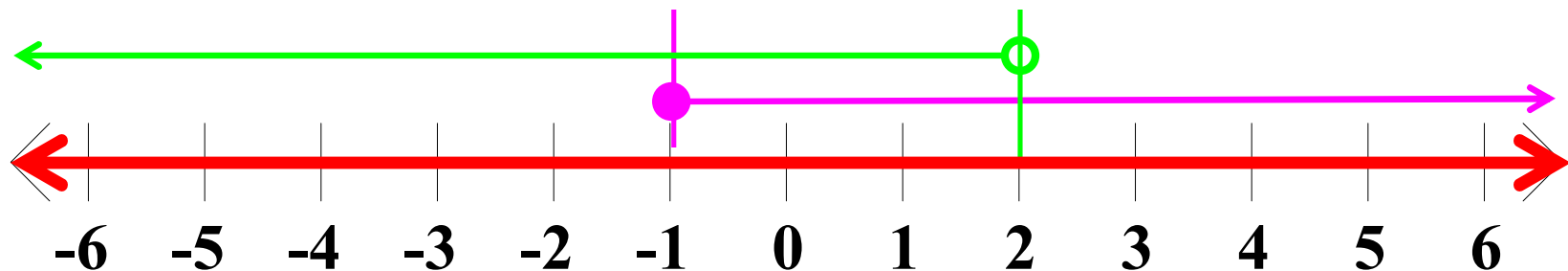
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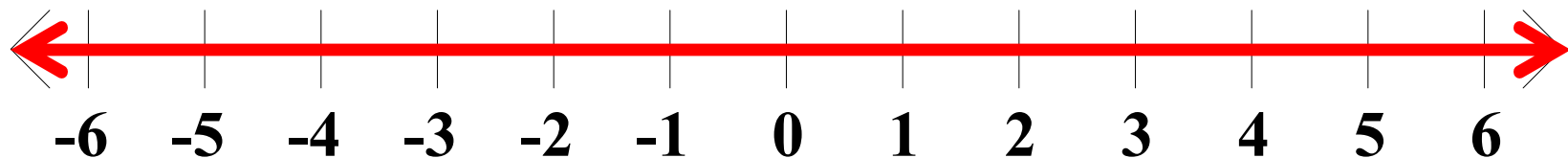
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# Algebra II   Class Worksheet #3   Unit 1

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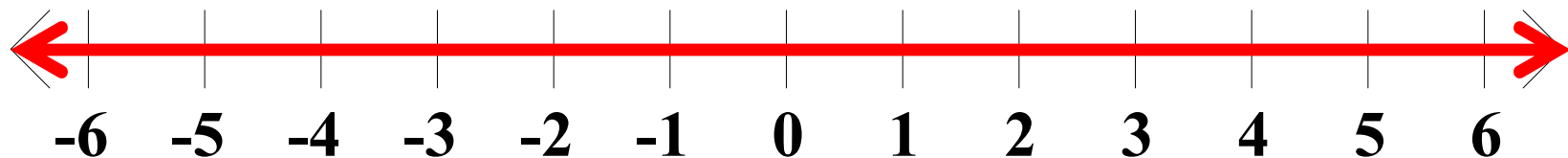
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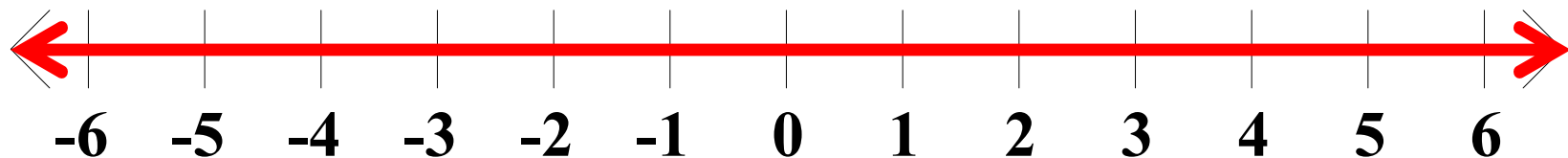
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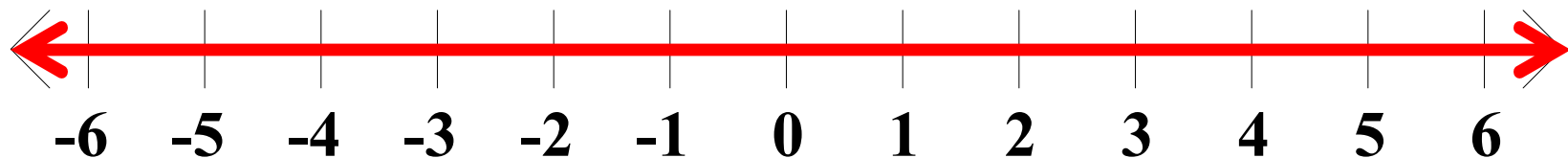<mark>Step 3:  Express the final solution in simplest form.</mark>

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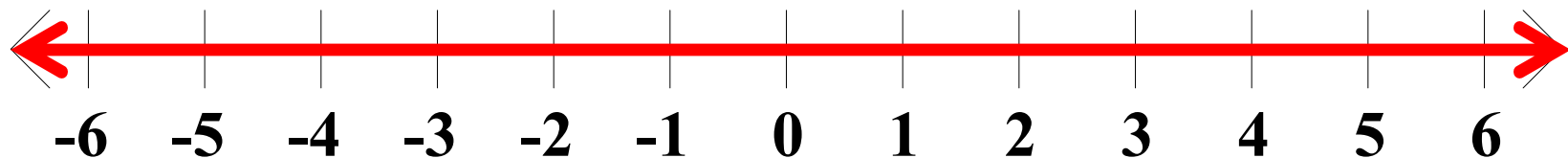
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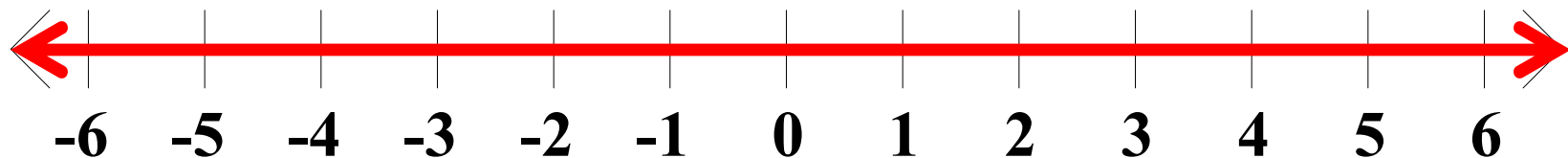
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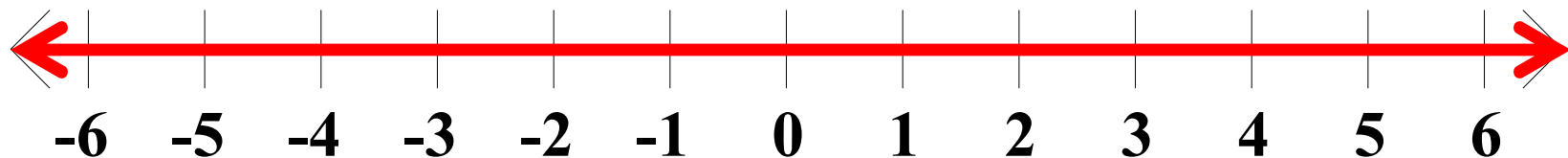
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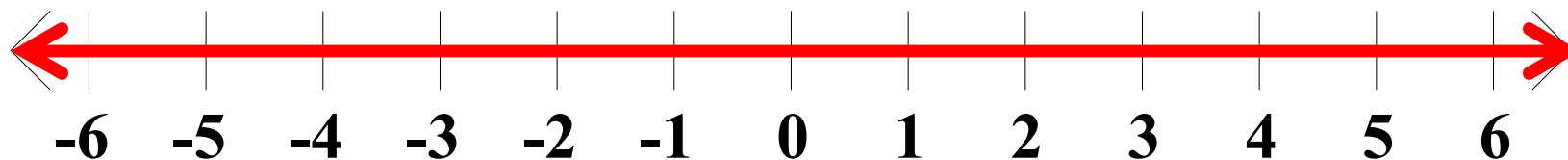
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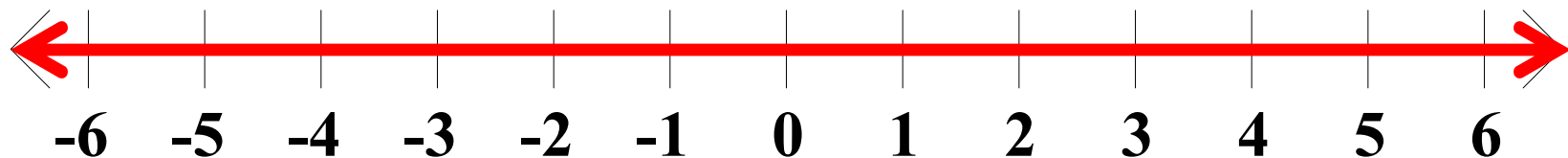
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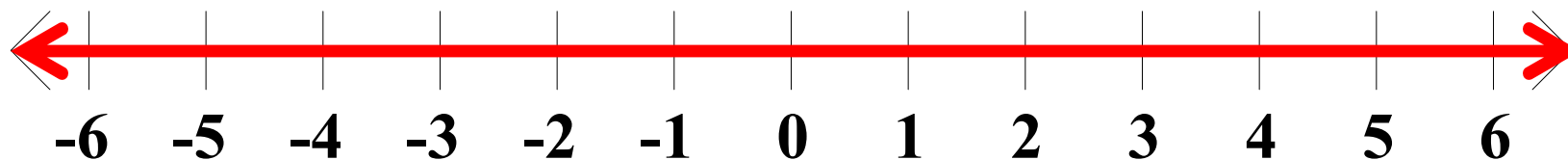
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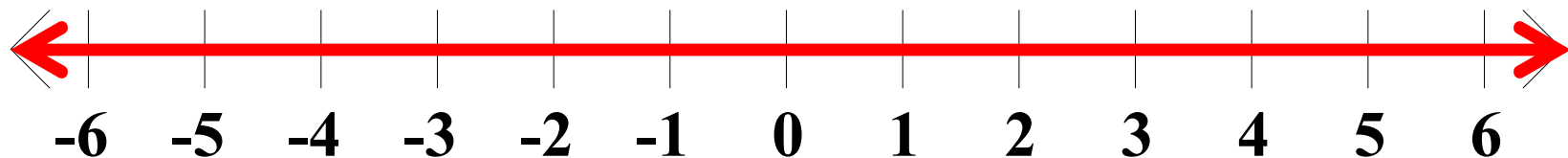
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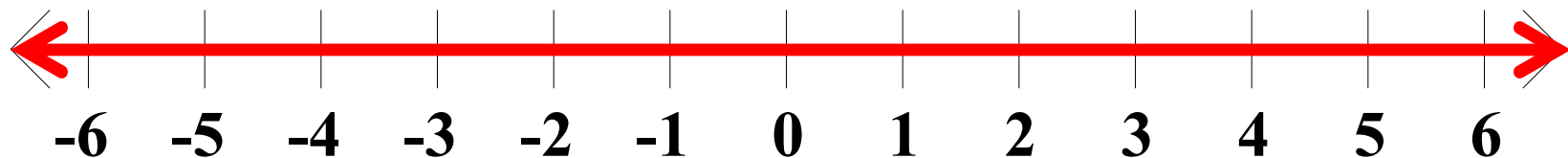
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