

2.25

Solving a Linear Inequality with Absolute Value

• Example 1

Solve

$$|2x - 3| < 5$$

The given absolute value inequality is equivalent to

$$-5 < 2x - 3 < 0 \text{ or } 0 \leq 2x - 3 < 5$$

$$-5 < 2x - 3 < 5$$

$$-2 < 2x < 8$$

$$-1 < x < 4$$

The solution is

$$-1 < x < 4.$$

● ● ● CHECK YOURSELF 1

Solve.

$$|3x - 4| \leq 8$$

• Example 2

Solve

$$|x - 3| \geq 2$$

The given absolute value inequality is equivalent to

$$x - 3 \leq -2 \text{ or } x - 3 \geq 2$$

$$x \leq 1 \text{ or } x \geq 5$$

The solution is $x \leq 1$ or $x \geq 5$.**● ● ● CHECK YOURSELF 2**

Solve.

$$|2x + 5| > 7$$

● ● ● CHECK YOURSELF ANSWERS

1. $-\frac{4}{3} \leq x \leq 4$ 2. $x < -6$ or $x > 1$.

2.25 Exercises

Name _____

Section _____

Date _____

Solve each inequality

1. $|x| \leq 4$

2. $|x - 4| > 2$

3. $|x + 5| < 3$

4. $|x + 6| \leq 4$

5. $|x - 7| > 5$

6. $|3 - x| > 5$

7. $|5 - x| < 3$

8. $|x - 7| < 0$

A N S W E R S

1. _____

2. _____

3. _____

4. _____

5. _____

6. _____

7. _____

8. _____