

# Graphing a Linear Inequality with Absolute Value on the Number Line

## • Example 1

Solve the inequality below and graph on the number line all the points  $x$  satisfying this inequality.

$$|5x - 2| > 8$$

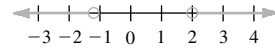
We know that the given inequality is equivalent to the compound inequality

$$5x - 2 < -8 \quad \text{or} \quad 5x - 2 > 8$$

Solving, we have

$$\begin{array}{llll} 5x - 2 < -8 & \text{or} & 5x - 2 > 8 & \text{Add 2.} \\ 5x < -6 & & 5x > 10 & \text{Divide by 5.} \\ x < -\frac{6}{5} & & x > 2 & \end{array}$$

The graph of the solution is shown below.



### CHECK YOURSELF 1

Solve and graph the solution.

$$|3 - 2x| \geq 9$$



### CHECK YOURSELF ANSWER

1.  $x \leq -3$  or  $x \geq 6$



# 2.26 Exercises

Name \_\_\_\_\_

Section \_\_\_\_\_

Date \_\_\_\_\_

## A N S W E R S

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

Solve each inequality and graph the solution.

1.  $|x + 5| \geq 0$

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

3.  $|3x - 1| > 8$

4.  $|3x + 4| \geq 5$

5.  $|2x + 3| \leq 9$

6.  $|5x - 3| > 7$

7.  $|6x - 5| < 13$

8.  $|2 - 3x| \leq 11$