

2.26

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.

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

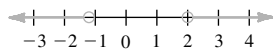
We know that the given inequality is equivalent to the compound inequality

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

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