GUIDED PRACTICE for Examples 1, 2, and 3

Solve the equation. Check for extraneous solutions.

1. $|x| = 5$
2. $|x - 3| = 10$
3. $|x + 2| = 7$
4. $|3x - 2| = 13$
5. $|2x + 5| = 3x$
6. $|4x - 1| = 2x + 9$

INEQUALITIES You can solve an absolute value inequality by rewriting it as a compound inequality and then solving each part.

KEY CONCEPT *For Your Notebook*

Absolute Value Inequalities

Inequality	Equivalent form	Graph of solution
$\|ax + b\| < c$	$-c < ax + b < c$	
$\|ax + b\| \leq c$	$-c \leq ax + b \leq c$	
$\|ax + b\| > c$	$ax + b < -c$ or $ax + b > c$	
$\|ax + b\| \geq c$	$ax + b \leq -c$ or $ax + b \geq c$	

EXAMPLE 4 Solve an inequality of the form $|ax + b| > c$

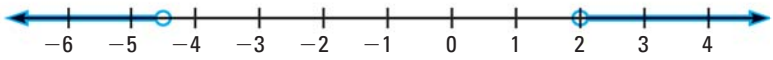
Solve $|4x + 5| > 13$. Then graph the solution.

Solution

The absolute value inequality is equivalent to $4x + 5 < -13$ or $4x + 5 > 13$.

First Inequality		Second Inequality
$4x + 5 < -13$	Write inequalities.	$4x + 5 > 13$
$4x < -18$	Subtract 5 from each side.	$4x > 8$
$x < -\frac{9}{2}$	Divide each side by 4.	$x > 2$

▶ The solutions are all real numbers less than $-\frac{9}{2}$ or greater than 2. The graph is shown below.



Animated Algebra at classzone.com

GUIDED PRACTICE for Example 4

Solve the inequality. Then graph the solution.

7. $|x + 4| \geq 6$
8. $|2x - 7| > 1$
9. $|3x + 5| \geq 10$