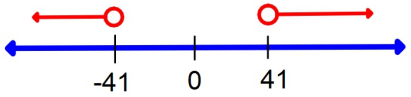
Sec 1-5

Solving Absolute Value Inequalities

Solve. $|2x - 5| > 41$

Where are you on a number line if you are more than 41 units from zero?



$2x - 5 < -41$ OR $2x - 5 > 41$

$+5 \quad +5 \qquad +5 \quad +5$

$\frac{2x}{2} < \frac{-36}{2} \qquad \frac{2x}{2} > \frac{46}{2}$

$x < -18$ OR $x > 23$

Properties	Absolute Value Inequalities

Let k represent a positive real number.

$|x| \geq k$ is equivalent to $x \leq -k$ or $x \geq k$.

Solve. $|2x - 5| > 41$

$2x - 5 < -41$ OR $2x - 5 > 41$

$+5 \quad +5 \qquad +5 \quad +5$

$\frac{2x}{2} < \frac{-36}{2}$ or $\frac{2x}{2} > \frac{46}{2}$

$x < -18$ or $x > 23$

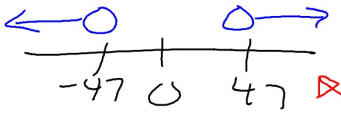
Solve. $2|x - 5| + 13 \geq 107$

$-13 \quad -13$

$\frac{2|x-5|}{2} \geq \frac{94}{2}$

$|x - 5| \geq 47$

distance from zero is more than 47 units



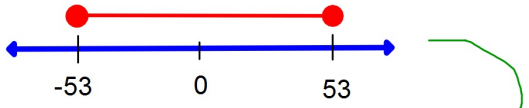
$x - 5 \leq -47$ or $x - 5 \geq 47$

$+5 \quad +5 \qquad +5 \quad +5$

$x \leq -42$ or $x \geq 52$

Solve. $|3x + 11| \leq 53$

Where are you on a number if you are less than 53 units from zero?



$-53 \leq 3x+11 \leq 53$

$-11 \quad -11 \quad -11$

$\frac{-64}{3} \leq \frac{3x}{3} \leq \frac{42}{3}$

$\frac{-64}{3} \leq x \leq 14$

Properties	Absolute Value Inequalities
Let k represent a positive real number.	
$\lvert x \rvert \leq k$	is equivalent to $-k \leq x \leq k$.

Solve. $|3x + 11| \leq 53$

$-53 \leq 3x+11 \leq 53$

$-11 \quad -11 \quad -11$

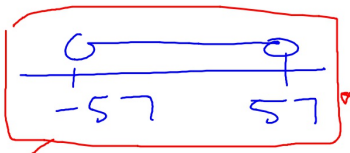
$\frac{-64}{3} \leq \frac{3x}{3} \leq \frac{42}{3}$

$\frac{-64}{3} \leq x \leq 14$

Solve. $|3x - 17| - 58 < -1$

$+58 \quad +58$

$|3x-17| < 57$



Distance from zero is less than 57 units....
Between -57 and 57

$-57 < 3x-17 < 57$

$+17 \quad +17 \quad +17$

$\frac{-40}{3} < \frac{3x}{3} < \frac{74}{3}$

$\frac{-40}{3} < x < \frac{74}{3}$

Hwk #8 Sec 1-5

Page 36

Problems 10, 14, 20, 23, 41, 47, 51

You DON'T need to graph the solutions