

Lesson 91/101 Solving Absolute Value Inequalities

An **absolute value inequality** is an inequality with at least one absolute-value expression.

The solution to an absolute-value inequality can be written as a compound inequality.

< write as a conjunction (AND)

> write as a disjunction (OR)

Examples: Solve and graph each inequality.

1. $|x - 10| \leq 12$

$$x - 10 \leq 12 \text{ and } x - 10 \geq -12$$

$$x \leq 22 \text{ and } x \geq -2$$



2. $|x + 12| > 18$

$$x + 12 > 18 \text{ or } x + 12 < -18$$

$$x > 6 \text{ or } x < -30$$



3. $|x - 9| + 3 \leq 10$

$$|x - 9| \leq 7$$

$$x - 9 \leq 7 \text{ and } x - 9 \geq -7$$

$$x \leq 16 \text{ and } x \geq 2$$



4. $|5x - 5| - 12 > -2$

$$|5x - 5| > 10$$

$$5x - 5 > 10 \text{ or } 5x - 5 < -10$$

$$5x > 15 \text{ or } 5x < -5$$

$$x > 3 \text{ or } x < -1$$

