Absolute Value Equations and Inequalities

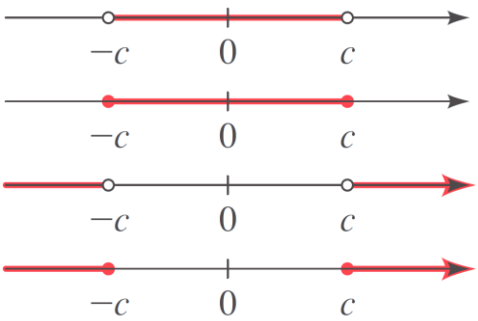
Absolute Value Equations

$|u| = a$ means $u = a$ or $u = -a$

Remember: Solve the absolute value equation

$$|1 - 2z| + 6 = 9$$

Properties of Absolute Value Inequalities

inequality	Equivalent form	Graph
• $\|x\| < c$	$-c < x < c$	
• $\|x\| \leq c$	$-c \leq x \leq c$	
• $\|x\| > c$	$x < -c$ or $c < x$	
• $\|x\| \geq c$	$x \leq -c$ or $c \leq x$	

Example 1: Solve the absolute value inequality

$$|x - 2| + 2 < 3$$

Example 2: Solve the inequality

$$|x + 1| \geq 1$$

Example 3: Solve the absolute value inequality. Express the answer using interval notation and graph the solution set.

- $3 - |2x + 4| \leq 1$

- $\left|\frac{2x-3}{2} + \frac{1}{3}\right| > 1$