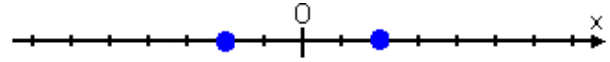


Solving Absolute Inequalities

Date:

Recall: $|x|$ is the distance of x from zero." For instance, since both -2 and 2 are two units from zero,

we have $|-2| = |2| = 2$:



There are two forms of absolute value inequalities. One with *less than*, $|x| < a$, and the other with *greater than*, $|x| > a$. They are solved differently.

Case 1: Given the inequality $|x| < a$, the solution is always of the form $-a < x < a$.

Example 1

Solve $|2x + 3| < 6$.

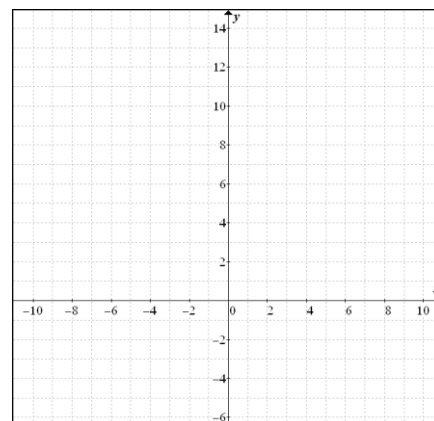
Case 2: Given the inequality $|x| > a$, the solution always splitting the inequality into two pieces: $x < -a$ or $x > a$.

Example 2

Solve $|2x - 3| \geq 5$.

Example 3

Solve $|2x + 3| < x + 6$ and interpret it by graph.



Example 4

Find the absolute-value inequality statement that corresponds to the inequality $-2 < x < 4$.

Example 5

Find the absolute-value inequality statement that corresponds to the inequalities $x \leq 19$ or $x \geq 24$.

Homework:

Handout: Equations and Inequalities
containing Absolute Values #2,
6cde, 7def, 8i-1