

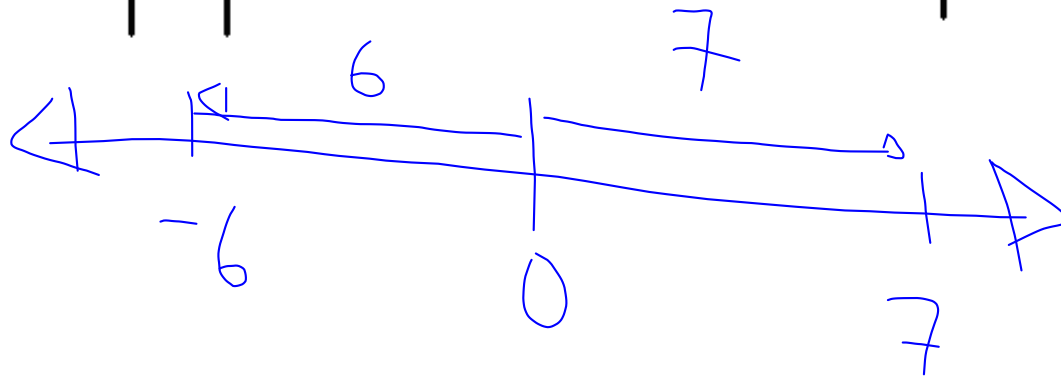
Day 9: Solving Absolute Value Equations

Absolute Value: Is the measure of the *distance* from a number to zero on the number line (because distances are always positive, the absolute value of any number/variable is positive).

Examples:

$$|7| = 7$$

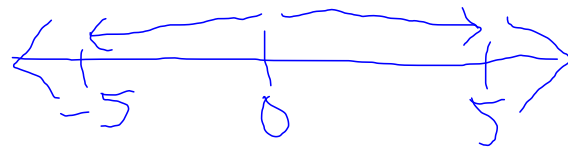
$$|-6| = 6$$



Solve the following absolute value equations:

$$|x| = 5$$

$$\pm 5$$



$$|x| = 5$$

$$+ x = 5$$

$$- |x| = 5$$

$$x = -5$$

$$|2x - 3| = 5$$

$$+(2x - 3) = 5$$

$$2x - 3 = 5$$

$$2x = 8$$

$$x = 4$$

$$-(2x - 3) = 5$$

$$-2x + 3 = 5$$

$$-2x = 2$$

$$x = -1$$

As with radical equations, we must be sure the answers are not extraneous. Do so by substituting in the original problem to see if the solutions satisfies the equation or by checking the intersections of the graphs of $y_1 = |2x - 3|$ and $y_2 = 5$

Give this one a shot on your own...

$$-1|x-4|=2x+1$$

$$9 = 2(-5) + 1$$

$$\cancel{9 = -9}$$

$$-1(x-4) = 2x+1$$

$$+1(x-4) = 2x+1$$

$$|x+1| + |x-3| = 6$$

$$5 + 1$$

$$\begin{array}{cc} + & + \\ + & - \\ - & - \end{array}$$

$$(x+1) + (x-3) = 6$$

$$2x - 2 = 6$$

$$2x = 8$$

$$x = 4$$

$$(x+1) - (x-3) = 6$$

$$x+1 - x + 3 = 6$$

$$\cancel{4 = 6}$$

$$-(x+1) - (x-3) = 6$$

$$-2x + 2 = 6$$

$$-2x = 4$$

$$x = -2$$

Assignment:

Pg. 294 3, 7, 12, 15


odds