Section 1.8: Solving Absolute Value Equations

Remember
The **absolute value** of *x,* denoted $|x|$, is the distance *x i*s from 0.

Absolute Value Equations

To solve the equation $|x| = C$, use the following properties:

If C is positive, then $|x|$ = C is equal to $x = \pm C$.

If C is negative, then $|x|$ = C has no solution.

If C is zero, then the solution of $|x| = 0$ is $x = 0$.

If the absolute value equation is more complicated than $|x| = C$, **isolate** the absolute value first and then solve it.

Examples:

1. Solve for x.

$$|x| = 6$$

2. Solve for x.

$$|2x - 3| = 7$$

3. Solve for x.

$$|6 - 2x| + 6 = 14$$

4. Solve for x.

$$2|-3(2x-8)|+4=30$$

5. Solve for x.

$$-4\left|\frac{1}{2}x+1\right|+3=-11$$

6. Solve for x.

$$|2(x+3)-4|+5=4$$