In 4.2 we discussed what an inequality was and we used/learned more about sets.

*Def* The **absolute value** of a quantity is the distance that quantity is from the origin (0).

Note: distances are always positive.

In Math this definition looks like:

1. or 2.

## The Absolute Value Principle for Equations

For any positive number p and any algebraic expression X & Y:

1. The solutions of are those numbers that satisfy
2. The equation is equivalent to the equation .
3. The equation has no solution
4. The equation is equivalent to

Ex 1 Solve each absolute value equation. Check your solutions.

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.

## Inequalities with Absolute Value

Consider the inequality

What does the solution set look like?

Graph it.

Now consider the inequality

What does the solution set look like?

Graph it.

Remember!! If its

 its Less **Than; ThAND** AND

But

 its Greater; great-OR OR

Ex: Find the solution set to the inequalities:

1.
2.
3.
4.
5.
6.
7.
8.
9.
10.
11.

Ex: Find an inequality that has the solution set:

1.