Solving Absolute Value Equations

STEP 1:

Look at your equation.
Is the absolute value isolated?

YES → **STEP 2:**

NO → **Isolate the absolute value.**

Rewrite the equation so that the absolute value is completely isolated (all by itself).

STEP 2:
Is the absolute value equal to a negative number?

NO → **STEP 3:**

YES → **An absolute value is always greater than or equal to zero, therefore it can never equal a negative number!**

There is NO solution to this equation! We write:

∅

This is called the "Empty Set." It is a solution set that contains no solutions!

STEP 3:
Split your isolated absolute value equation into two regular equations by taking the inside of the absolute value and setting it equal to the positive and negative version of the other side of the equation.

STEP 4:
Solve both equations.

STEP 5:
Check to see if any of your solutions are extraneous. Write your solution(s) in a solution set of the form x = { , }.

Adapted from Stroh, A. (2017, October 17). Algebra 1 Unit 3 Interactive Notebook Pages | Solving Equations. Math by the Mountain.
https://mathbythemountain.com/2017/10/17/algebra-1-unit-3-interactive-notebook-pages-solving-equations/