**Notes:**

Absolute value equations:

To solve an absolute value equation, isolate the absolute value on one side of the equal sign, and establish two cases:

|  |  |
| --- | --- |
| **Case 1:**  |a| = b  a = b Set the expression inside the absolute value symbol equal to the other given expression. | **Case 2:**  |a| = b  a = -b  Set the expression inside the  absolute value symbol equal to the negation of the other given  expression |

**Absolute value inequalities:**

Start by isolating the absolute value on one side of the inequality symbol, then follow the rules below:

If the symbol is

If then the solutions to are or

(or) if all real numbers will satisfy

**Think about it:** absolute value is always positive (or zero), so , of course, it is greater than any negative number.

If the symbol is(0r≥)

If then the solutions to and

Also written as :

(and) if there is no solution to

**Think about it:** absolute value is always positive (or zero), so , of course, it cannot be less than a negative number.

Questions:

* 1. Solve the following equation for x

|x + 5| = 9

* 1. Solve the following equation for x

2|x -4| + 9 = 19

* 1. Solve the following inequality for x

* 1. Solve the following inequality for x

|x + 10| + 5 ≤ 20