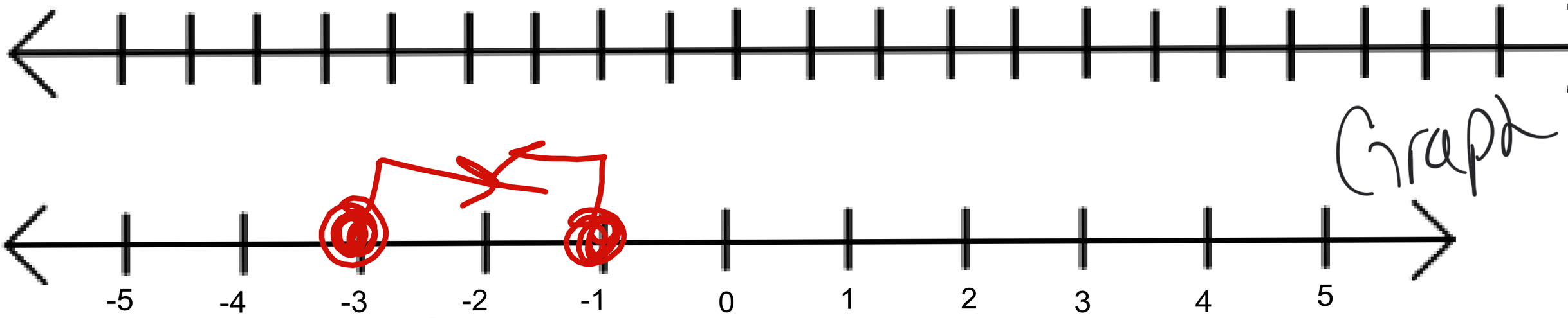
Solving Absolute Value Equation & Inequalities

Objective: We will be able to understand the definition of absolute value and how to manipulate that symbol to solve inequalities algebraically, represent the absolute value inequalities on a number line and express characteristics in both interval notation and set notation.

$$-x - 2 \leq 1$$
$$+2 \quad +2$$
$$-x \leq 3$$
$$\div -1 \quad \div -1$$
$$\boxed{x \geq -3}$$

$$\longleftrightarrow$$

$$x + 2 \leq 1$$
$$-2 \quad -2$$
$$\boxed{x \leq -1}$$



Graph

Domain: $\boxed{-3 \leq x \leq -1}$ or $[-3, -1]$

$3 > 1$

double $6 > 2$

triple $18 > 6$

$\div -2$ $\quad -9 \quad 7 \quad -3$

$* -2 \quad 18 \quad 7 \quad 6$

Why do we switch the ineq. when you divide or mult by a neg #.

3 Example Solve, graph and state the domain.

$$|4-x|+15>21$$

Solving Absolute Value Inequalities

1st Ineq:

$|4-x|+15>21$

$4-x+15>21$

$19-x>21$

$-19 \quad -19$

$\frac{-x}{-1} > \frac{2}{-1}$

$x<-2$

2nd Ineq

$-(|4-x|+15>21)$

$-4+x|+15>21$

$11+x>21$

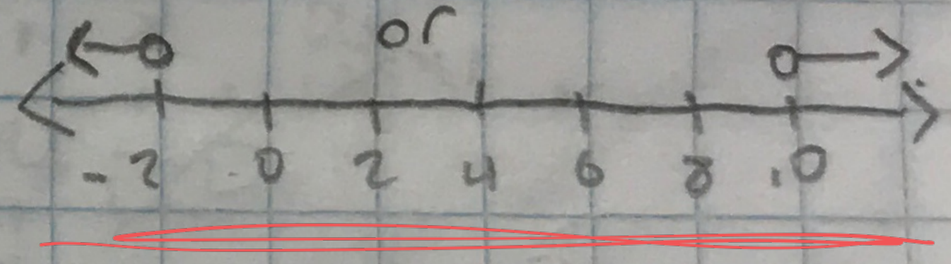
$-11 \quad -11$

$\frac{1x}{1} > \frac{10}{1}$

$x>10$

or

Domain:

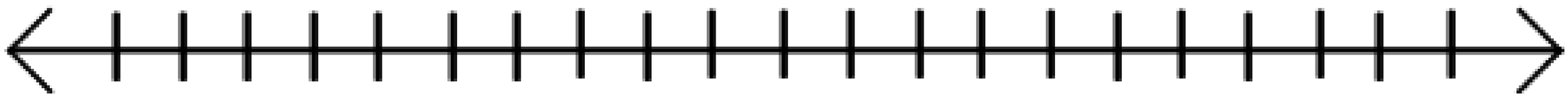


$x<-2$ or $x>10$ ← Domain

4 Example

Solve, graph and state the domain.

$$|x+4|-10 \leq -2$$

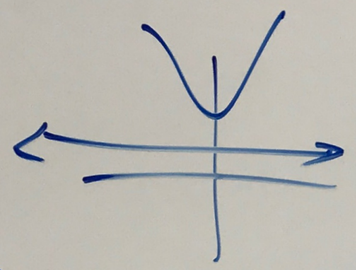


Math 2

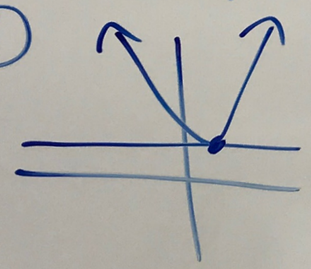
Assessment Friday

Topics

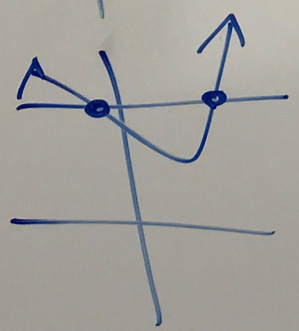
- Graph Absolute Value fun
  $y = a|x-h|+k$
- Solve Absolute Value Equat
  $\# = a|x-h|+k$

① 

No Soln. ←

② 

One Soln

③ 

2 soln.

- Solve Absolute Value Ineq.
  $\# < a|x-h|+k$
  $>$
  or $\leq$
  $\geq$

① Many Soln

② No Solut.