SOLVING INEQUALITIES

$A = \{-5, -3, 0, 2, 8\}$ $B = \{-2, -1, 0, 1, 2\}$

A OR B | $A \cup B = \{-5, -3, -2, -1, 0, 1, 2, 8\}$
          union

A and B | $A \cap B = \{0, 2\}$
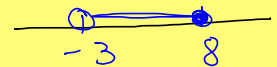   intersection

Interval Notation

$\leq, \geq$ ● [,] $x < 3$ $-3 < x \leq 8$

$<, >$ ○ (,) $(-\infty, 3)$ $(-3, 8]$

$$(-\infty, 6] \cup (1, 10]$$

$$(-\infty, 6] \cap (1, 10]$$

intersection

$$(1, 6]$$
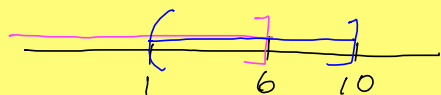
$$(-\infty, 10]$$

$$8 - (5 + 3m) < 9 + 2(m+4)$$

$$8 - 5 - 3m < 9 + 2m + 8$$

$$3 - 3m < 17 + 2m \atop +3m$$

$$m < 2 \atop \frac{}{2}$$

$$\frac{-14}{5} < \frac{5m}{5}$$

$$\frac{-14}{5} \quad \left(-\frac{14}{5}, \infty\right)$$
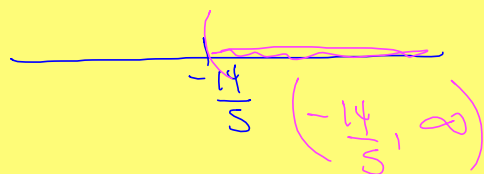
$$\frac{-4x}{-4} < \frac{20}{-4}$$

$$x > -5$$

$$2 < 5$$

$$\mathbb{R} \text{ OR } (-\infty, \infty)$$

$$2 > 5 \text{ false}$$

No sol. $\varnothing$

$$\{ \ \}$$

$8 + 5x \leq 3x - 5 < 9 - 2x$

$8 + 5x \leq 3x - 5$ AND $3x - 5 < 9 - 2x$

$\dfrac{2x}{2} \leq \dfrac{-13}{2}$ $\qquad 5x < 14$

$x \leq -\dfrac{13}{2}$ $\qquad x < \dfrac{14}{5}$

AND $\cap$

$\dfrac{-13}{2}$ $\qquad \dfrac{14}{5}$

$(-\infty, -\dfrac{13}{2}]$

$3x + 7 < -9$ OR $5x - 8 \geq 2$

$3x < -16$ $\qquad\qquad 5x \geq 10$

$x < \dfrac{-16}{3}$ OR $x \geq 2$

$\cup$
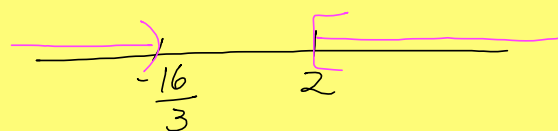
$-\dfrac{16}{3}$ $\qquad 2$

$(-\infty, -\dfrac{16}{3}) \cup [2, \infty)$
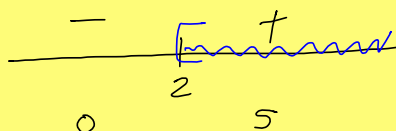
DOMAIN

(Allowable Values) — set of possible x-coord

$f(x) = \dfrac{4}{x-3}$

$x \neq 3$

$(-\infty, 3) \cup (3, \infty)$

$f(x) = \sqrt{x-2}$

0   2   5 $[2, \infty)$

Rational Function (fraction)

$\dfrac{}{\text{Denom} \neq 0}$

Even Root $= \sqrt{} , \sqrt[4]{}$

- must contain values
- Testing Points