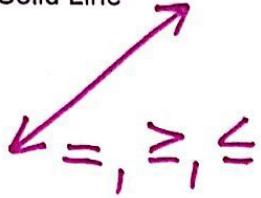


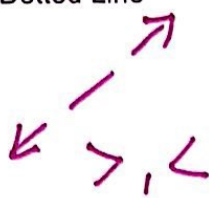
GUIDED NOTES: Solve Systems of Inequalities

To solve a system of inequalities, we need to find the ordered pairs that satisfy all of the inequalities of the system. The solution is their region of intersection.

Solid Line



Dotted Line



Shade Above



Shade Below



EX1. Solve the system of inequalities by graphing:

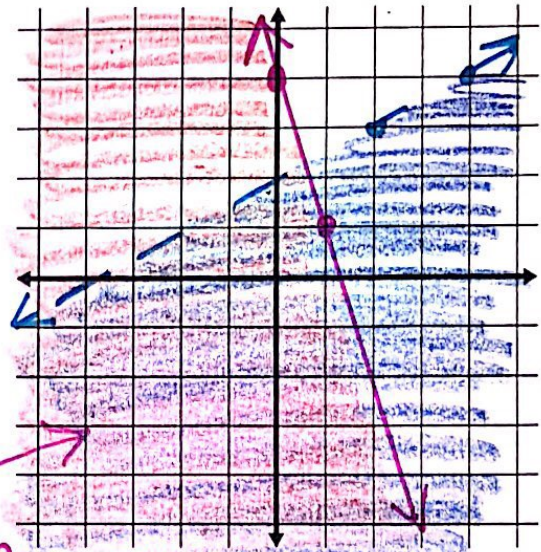
$$3x + y \leq 4$$

$$x - 2y > -4$$

$$\begin{array}{r} 3x + y \leq 4 \\ -3x \quad -3x \\ \hline y \leq -3x + 4 \end{array}$$

$$\begin{array}{r} x - 2y > -4 \\ -x \quad -x \\ \hline -2y > -x - 4 \\ \frac{-2y}{-2} > \frac{-x - 4}{-2} \\ y < \frac{1}{2}x + 2 \end{array}$$

$$\begin{array}{cc} 2x & 3x \\ \begin{array}{c} \text{shaded} \\ \text{region} \\ > \\ \geq \end{array} & \begin{array}{c} \text{shaded} \\ \text{region} \\ < \\ \leq \end{array} \end{array}$$



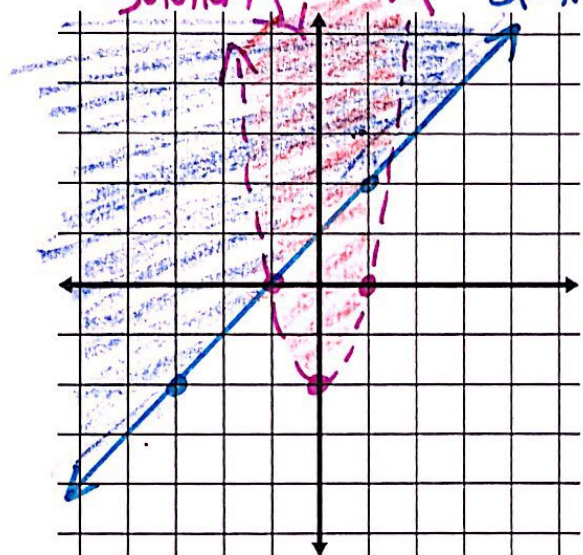
overlap = solution

* if you divide by negative, switch direction of inequality

EX2. Solve the system of inequalities by graphing:

$$y > 2x^2 - 2$$

$$y > x + 1$$



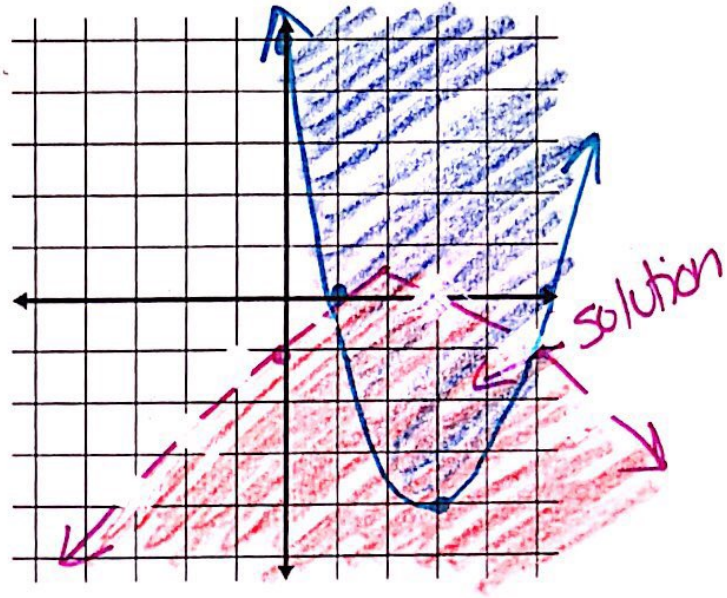
EX3. Solve the system of inequalities by graphing:

$$y < -3 \left| \frac{2}{5}x - 1 \right| + 2$$

$$y + 4 \geq (x - 3)^2$$

$$-4 \quad -4$$

$$y \geq (x - 3)^2 - 4$$



EX4. Solve the system of inequalities by graphing:

$$-y > x$$

$$y < -x$$

$$y \leq 3$$

$$x \leq 5$$

