

1/29/19

Objective: To solve linear inequalities
and systems of linear inequalities
by graphing

I. Review:

$$4x - 3y \geq -12 \longrightarrow 4x - 3y = -12 \quad \text{standard form}$$

X-Y intercept method: $\frac{4x}{4} = \frac{-12}{4} \quad x = -3 \quad (-3, 0)$

$$\frac{-3y}{-3} = \frac{-12}{-3} \quad y = 4 \quad (0, 4)$$

$$\begin{array}{r} \downarrow \\ 4x - 3y \geq -12 \\ \hline -4x \qquad -4x \end{array}$$

$$\frac{-3y}{-3} \geq \frac{-4x - 12}{-3}$$

$$y \leq \frac{4}{3}x + 4$$

Tricks:

I. solid line \leq, \geq
or

dashed line $<, >$

II.

$y >$
 $y \geq$ } shade above

$y <$
 $y \leq$ } shade below

II. Solving systems of linear inequalities by graphing.

- 1.) re-write both inequalities in slope-intercept form $y = mx + b$.
- 2.) graph lines either solid or dashed
- 3.) shade above or below each line
- 4.) Answer is where both shadings overlap.

Example:

$$3x - y \geq 2 \rightarrow$$

$$\boxed{y > 3x + 5}$$

dashed
above

$$\begin{array}{r} 3x - y \geq 2 \\ \hline -3x \quad -3x \end{array}$$

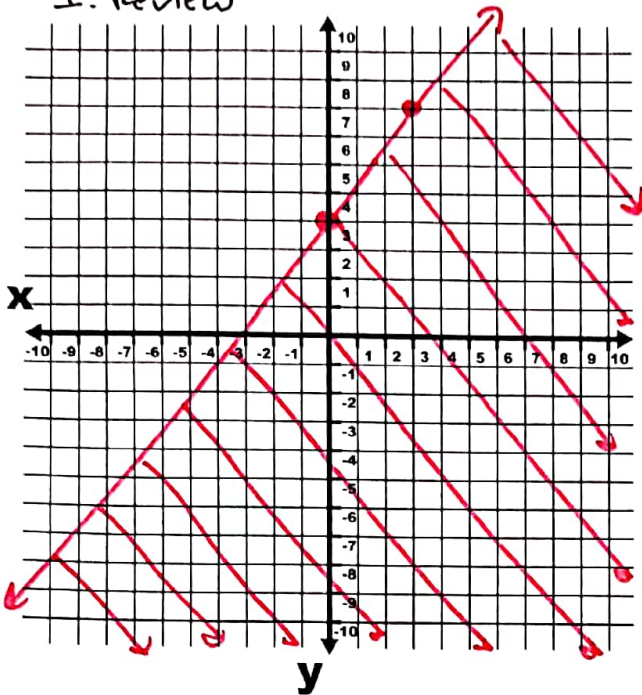
$$\begin{array}{r} -y \geq -3x + 2 \\ \hline -1 \quad -1 \quad -1 \end{array}$$

$$\boxed{y \leq 3x - 2}$$

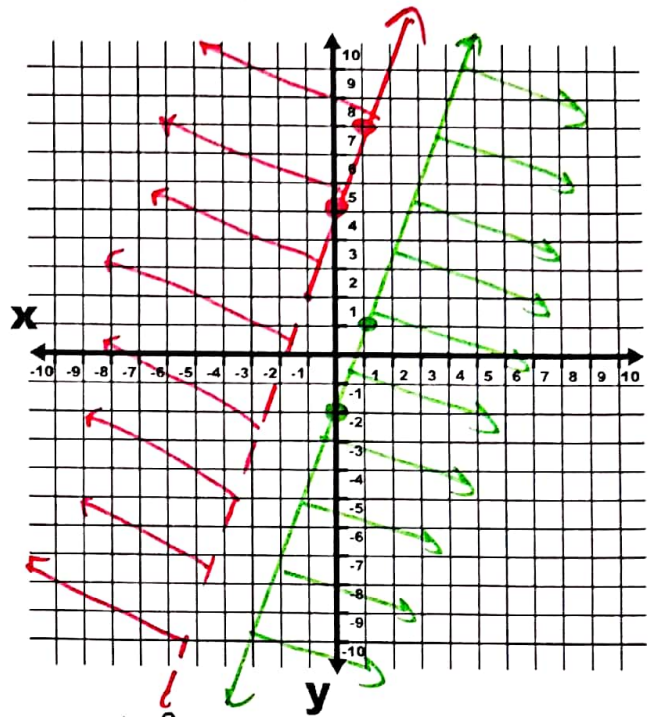
solid
below

Inverse Functions Notes: Coordinate Planes

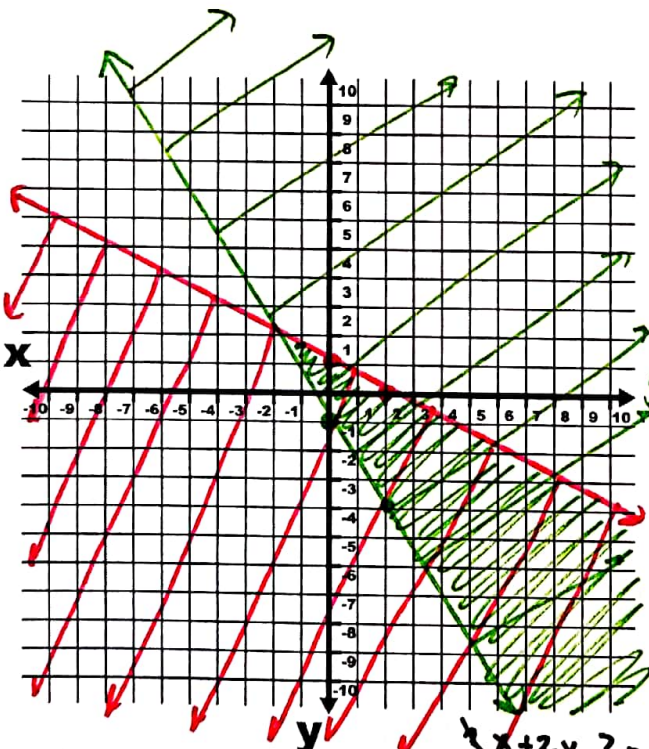
I. Review



$y \leq \frac{4}{3}x + 4$ solid



- $y > \frac{3}{1}x + 5$
 - $y \leq \frac{3}{1}x - 2$
- No ~~Solution~~
Solution



Red:
solid
below

green:
solid
above

$$\begin{aligned}
 3x + 2y &\geq -2 &\rightarrow & \frac{3x + 2y - 2}{-3x} & \frac{-2}{-3x} \\
 x + 2y &\leq 2 & & \frac{2y - 3x - 2}{2} & \frac{-3x - 2}{2} \\
 -x & & & & \\
 \hline
 \frac{2y}{2} &\leq \frac{-x + 2}{2} & & y &\leq \frac{-1}{2}x + 1 & & y &\geq \frac{-3}{2}x - 1
 \end{aligned}$$

