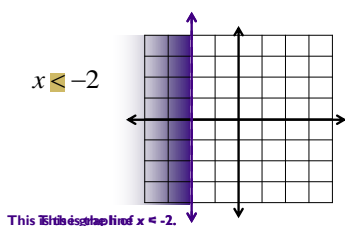


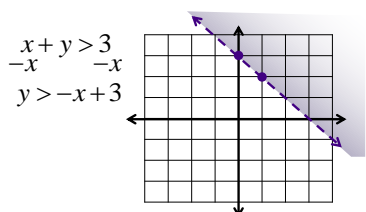
§1 I-6: Inequalities in Two Variables

- Linear inequalities can be written like so:
 $ax+by < c$ $ax+by \leq c$ $ax+by > c$ $ax+by \geq c$
- To graph a linear inequality...
 - Solve the inequality by isolating the y.
 - Graph the inequality using slope & y-intercept.
 - Graph the line with a solid line for \leq or \geq .
 - Graph the line with a dotted line for $<$ or $>$.
 - Shade above for $y >$ or $y \geq$.
 - Shade below for $y <$ or $y \leq$.

Example 1. Graph the inequality.

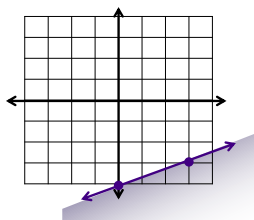


Example 2. Graph the inequality.



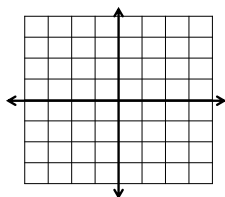
Example 3. Solve the inequality.

$$\begin{aligned} x - 3y &\geq 12 \\ -x &\quad -x \\ \hline -3y &\geq -x + 12 \\ -3 &\quad -3 \\ \hline y &\leq \frac{1}{3}x - 4 \end{aligned}$$



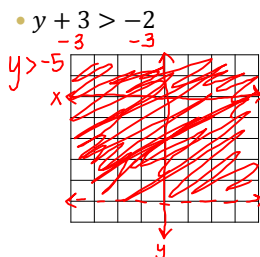
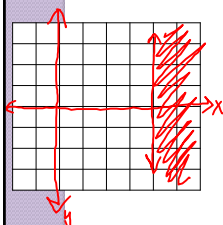
Check Point. Solve & graph the inequality.

$$-2x + y > 0$$



Check Points

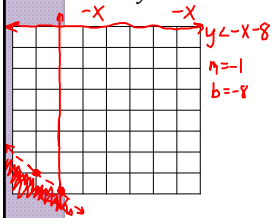
- Sketch a graph of the solution to each inequality.
- $x \geq 4$
- $y + 3 > -2$



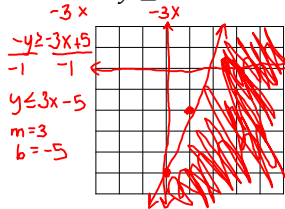
Check Points

- Sketch a graph of the solution to each inequality.

• $x + y < -8$



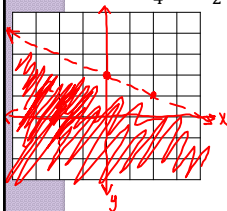
• $3x - y \geq 5$



Check Points

- Sketch a graph of the solution to each inequality.

• $\frac{1}{4}x + \frac{1}{2}y < 1$



$$\frac{1}{4}x + \frac{1}{2}y < 1$$

$$\frac{-\frac{1}{4}x}{-\frac{1}{4}x} \quad \frac{-\frac{1}{4}x}{-\frac{1}{4}x}$$

$$2\left(\frac{1}{2}y\right) < \left(-\frac{1}{4}x + 1\right)2 \quad \frac{-\frac{1}{4} \cdot 2}{-\frac{1}{4}} = \frac{2}{4} = \frac{1}{2}$$

$$y < -\frac{1}{2}x + 2$$

$$m = -\frac{1}{2}$$

$$b = 2$$
