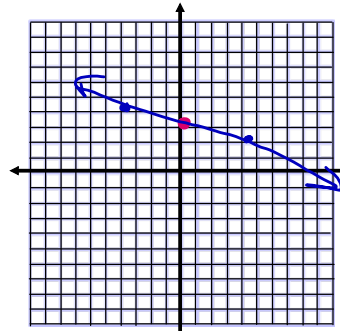


Write the equation of the line that passes through

(4, 4) and (0, 5) $m = -\frac{1}{4}$ $y - y_1 = m(x - x_1)$
 $\frac{\Delta y}{\Delta x} = \frac{4-5}{4-0} = -\frac{1}{4}$ $(x_1, y_1) = (0, 5)$ $\underline{y} = \underline{a}(\underline{x} - \underline{h}) + \underline{k}$
 $y = -\frac{1}{4}(x - 0) + 5$
 $y = -\frac{1}{4}x + 0 + 5$
 $y = -\frac{1}{4}x + 5$

Graph: $x + 4y = 12$
 $\frac{-x}{4} = \frac{-x}{4} + \frac{12}{4}$
 $y = -\frac{1}{4}x + 3$



$y = mx + b$
 ↑ slope ↑ y-int

Graphing Linear Inequalities

1. Solve for y
2. } Graph using slope & y-int.
3. } Solid or Dashed line
4. Shade (solution in step 1 for < or >)

*** Remember HOY VUX

SOLID LINE
 \geq or \leq

DASHED LINE
 $>$ or $<$

SHADE ABOVE
 $>$ or \geq

SHADE BELOW
 $<$ or \leq

Example: Graph $2x - 3y < 12$

$$\begin{array}{r} 2x - 3y < 12 \\ -2x \quad -2x \\ \hline -3y < -2x + 12 \\ \div -3 \quad \div -3 \end{array}$$

$y > \frac{2}{3}x - 4$

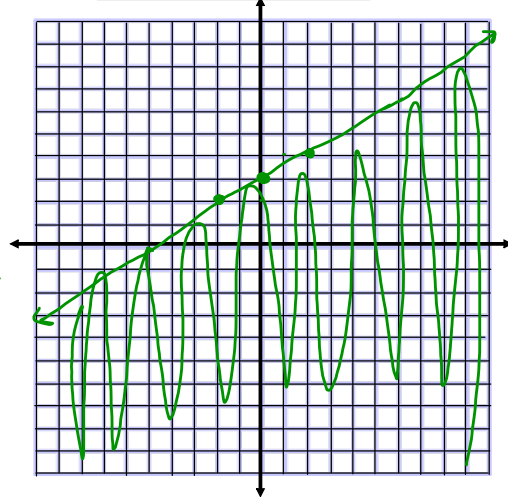
Step 1: Solve Inequality for y

$$\begin{aligned} x - 2y &\geq -6 \\ -x &\quad -x \\ \hline -2y &\geq -x - 6 \\ y &\leq \frac{1}{2}x + 3 \end{aligned}$$

Step 2 & 3: Graph line

Step 4: Shading

$$x - 2y \geq -6$$



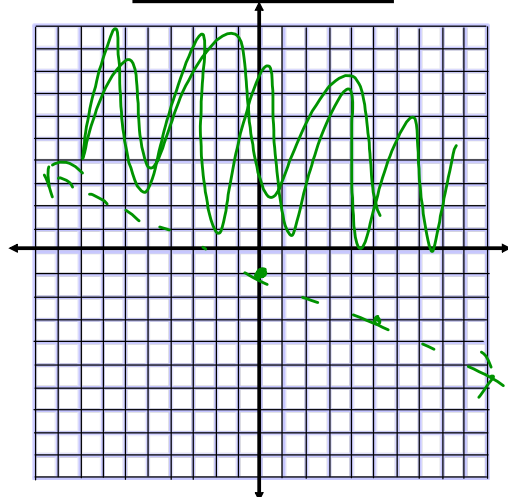
Step 1: Solve Inequality for y

$$\begin{aligned} 2x + 5y &> -5 \\ -2x &\quad -2x \\ \hline 5y &> -2x - 5 \\ y &> \frac{-2x - 5}{5} \\ y &> -\frac{2}{5}x - 1 \end{aligned}$$

Step 2 & 3: Graph line

Step 4: Shading

$$2x + 5y > -5$$



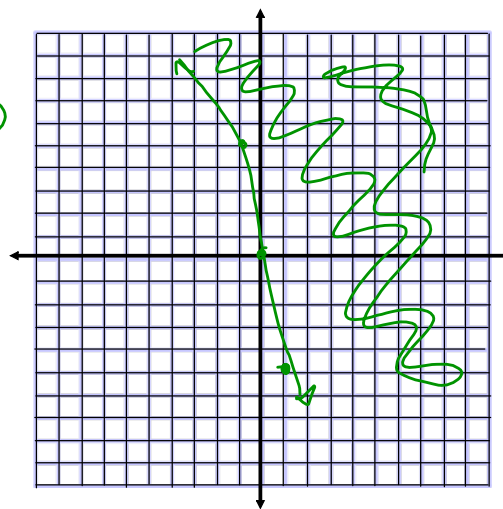
Step 1: Solve Inequality for y

$$5x + y \geq 0$$

$$\begin{array}{r} 5x + y \geq 0 \\ -5x \quad -5x \\ \hline y \geq -5x + 0 \end{array}$$

Step 2 & 3: Graph line

Step 4: Shading



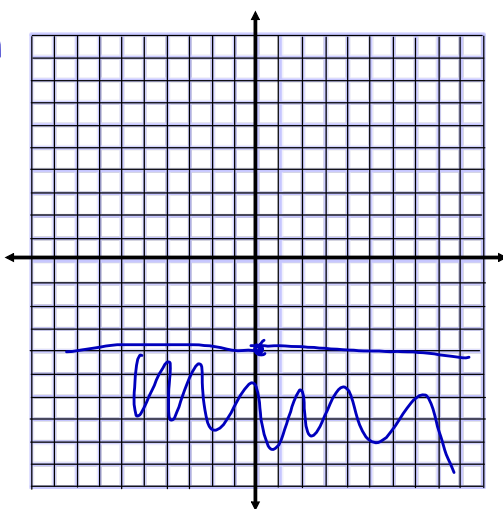
Step 1: Solve Inequality for y

$$y \leq -4$$

Horizontal slope
 $y =$ Vertical
 Undefined slope
 $x =$

Step 2 & 3: Graph line

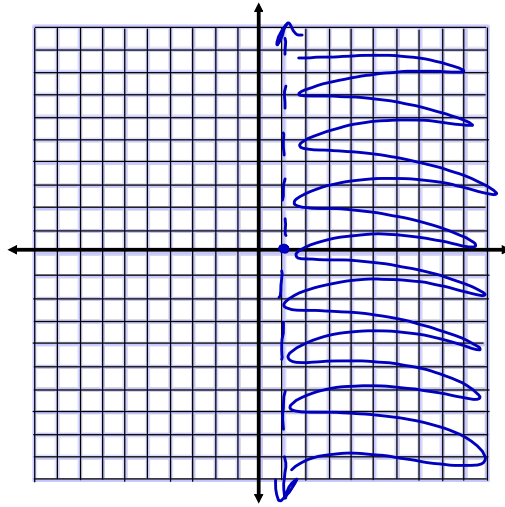
Step 4: Shading



Step 1: Solve Inequality for y

$$x > 1$$

Step 2 & 3: Graph line



Step 4: Shading

Practice / Homework

Graphing Linear Inequalities WS

