

Solve system $3x - 2y > -4$ and $2y + 2 \geq -x$

Step 1

(put in $y=mx+b$ form)

$$3x - 2y > -4$$

$$\begin{matrix} -3x & -3x \\ -2y & -2y \end{matrix}$$

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

(divided by negative flips inequality sign)

$$y < \frac{3}{2}x + 2$$

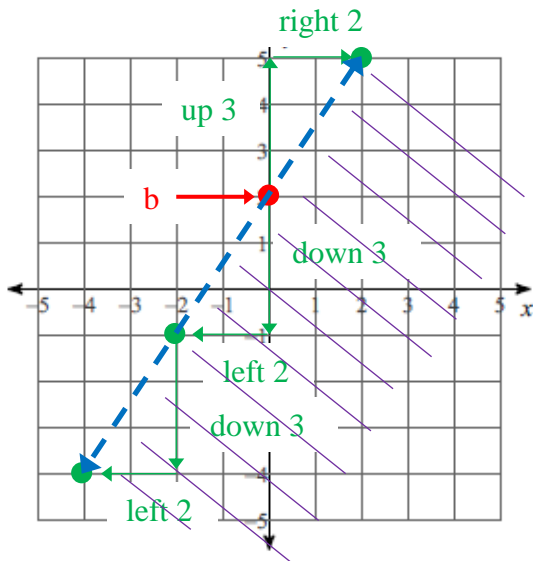
(use $y=mx+b$)

$b = 2$ (put first point on the y-axis at 2)

$m = \frac{3}{2}$ (from the b point up 3 and right 2)
(or from the b point down 3 and left 2)

$<$ (tells us to draw line dashed)

$y <$ (tells us to shade down)



Step 2

(put in $y=mx+b$ form)

$$2y + 2 \geq -x$$

$$\begin{matrix} -2 & -2 \end{matrix}$$

$$\frac{2y}{2} \geq \frac{-x - 2}{2} \frac{-2}{2}$$

$$y \geq -\frac{1}{2}x - 1$$

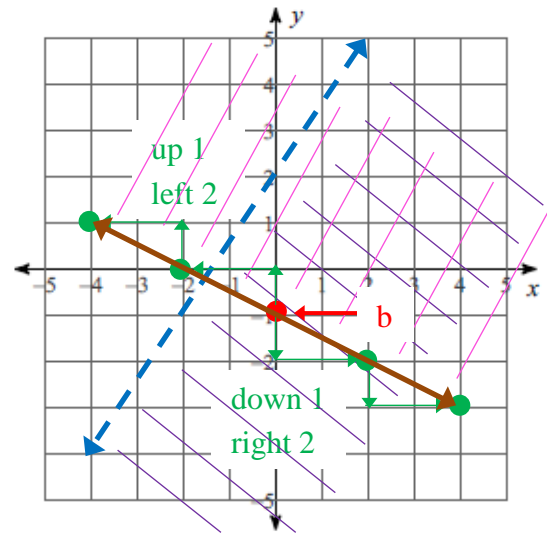
(use $y=mx+b$)

$b = -1$ (put first point on the y-axis at -1)

$m = -\frac{1}{2}$ (from the b point down 1 and right 2)
(or from the b point up 1 and left 2)

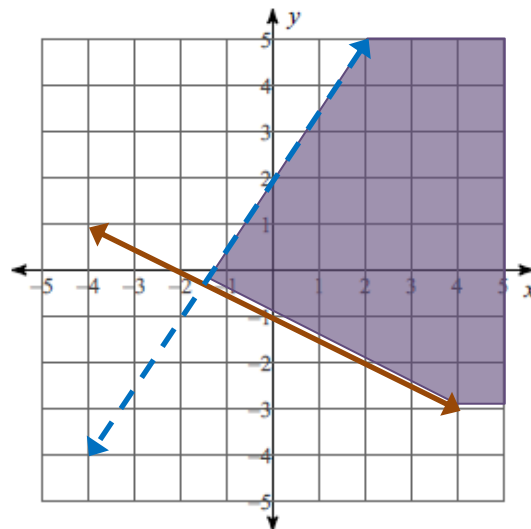
\geq (tells us to draw line solid)

$y \geq$ (tells us to shade up)



Step 3

from step 2 shade in dark the overlapping shaded area.



Rules:

$<$ or $>$ draw dashed line

\leq or \geq draw solid line

$y <$ or $y \leq$ shade down

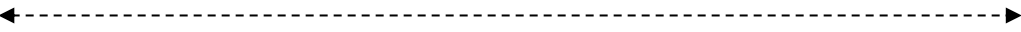
$y >$ or $y \geq$ shade up

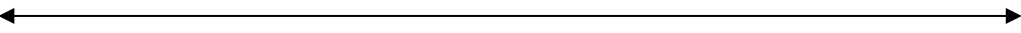
Always put into slope-intercept form
($y = mx + b$)

Changing to slope-intercept form is usually easiest for graphing the lines.

Change to $y = mx + b$ form to graph.

Solid or dashed line:

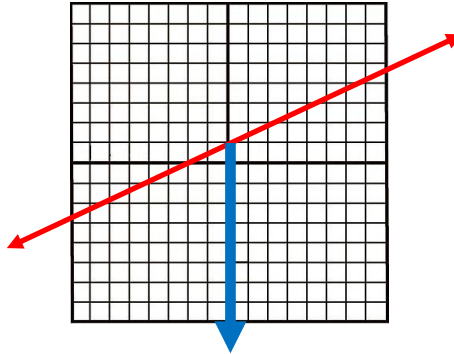
$<$ or $>$ dashed line 

\leq or \geq solid line 

Shade up or down:

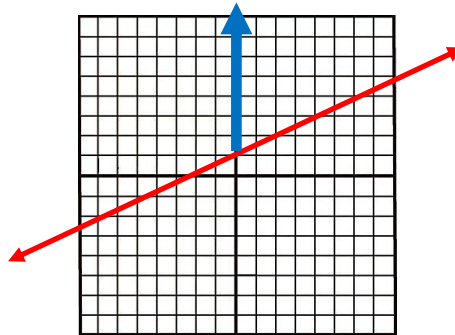
$y <$ or $y \leq$ shade down

Go to point on line and y-axis
Go down from that point
That is the area to shade



$y >$ or $y \geq$ shade up

Go to point on line and y-axis
Go up from that point
That is the area to shade



Area to shade in dark:

The area where the shading of both inequalities would overlap is where you shade.

This is the answer area.

