

Check whether the given ordered pair is a solution of

$$2x + 3y \geq 5.$$

Ex 1: $(0, 1)$
 $\begin{array}{c} x \\ y \end{array}$

$$2(0) + 3(1) \geq 5$$

$$0 + 3$$

$$3 \geq 5$$

False.

\geq Greater than or equal to

$>$ Greater than

\leq Less than or equal to.

$<$ Less than

Ex 2: $(4, -1)$
 $\begin{array}{c} x \\ y \end{array}$

$$2(4) + 3(-1) \geq 5$$

$$8 - 3 \geq 5$$

$$5 \geq 5$$

True

Ex 3: $(2, 1)$
 $\begin{array}{c} x \\ y \end{array}$

$$2(2) + 3(1) \geq 5$$

$$4 + 3 \geq 5$$

$$7 \geq 5$$

True!

Graphing a Linear Inequality.

Step 1: Pretend it's a $=$ Long enough to graph points

↳ Get $y =$ if needed.

Step 2: $< >$ Dashed Line ← — — — →

$\leq \geq$ SOLID Line ←————→

Step 3: SHADING. Pick a point NOT on the Line.

Plug it in.

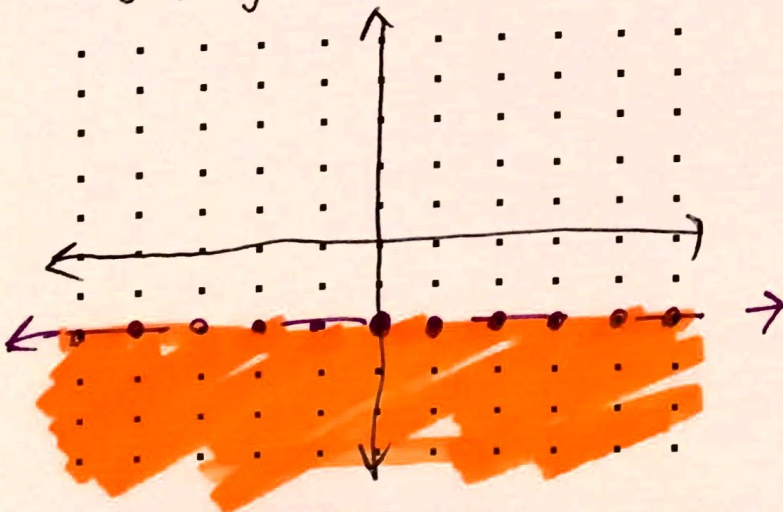
True → SHADE that side.

False → SHADE other side.

False $0 < -2$

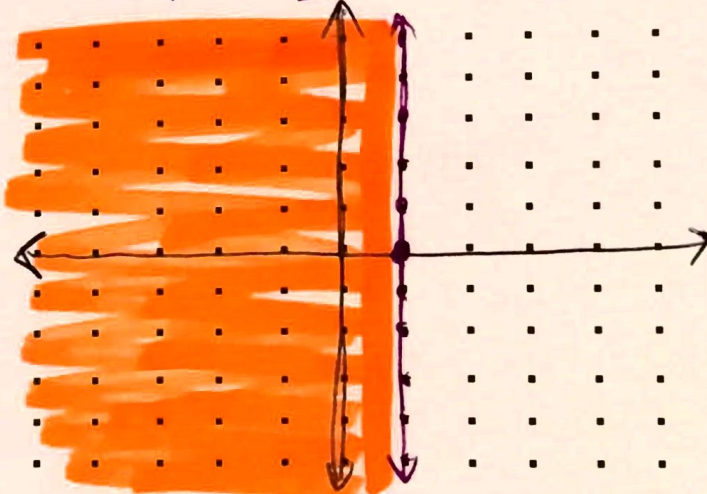
Graph the following inequalities in a coordinate plane.

Ex 4: $y < -2$ Go to y axis.
Just y Just # axis.



True $0 \leq 1$

Ex 5: $x \leq 1$ Go to x axis.
Just x Just #

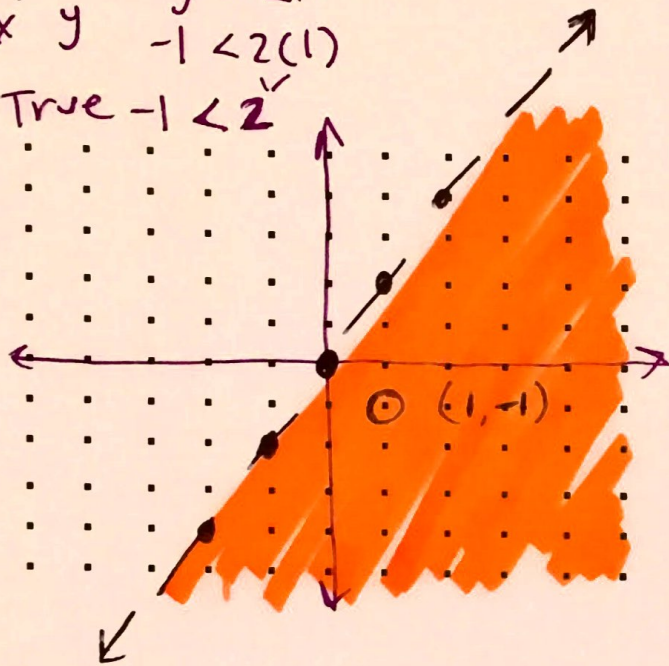


Graphing a Linear Inequality.

Ex 6: $y < 2x$

$$y = 2x + 0$$

$$\begin{array}{l} (1, -1) \\ x \quad y \end{array} \quad \begin{array}{l} y < 2x \\ -1 < 2(1) \end{array}$$

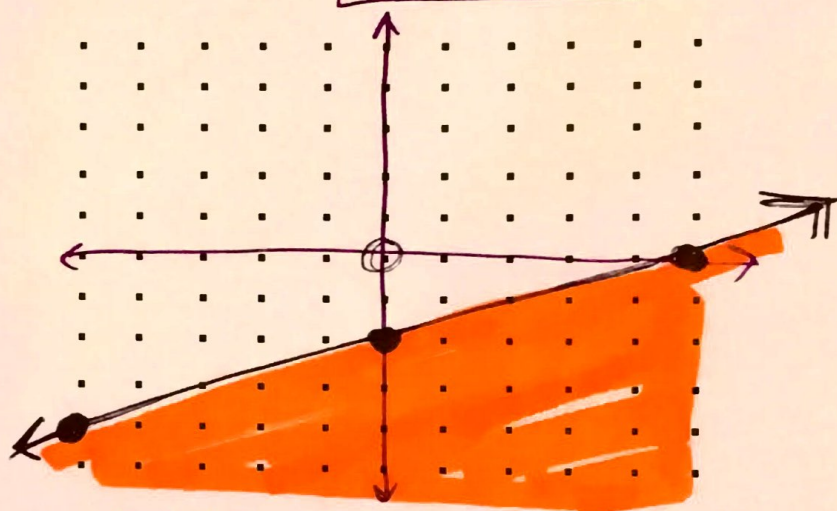
True $-1 < 2$ 

Ex 7: $2x - 5y \geq 10$

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

$$\begin{array}{r} -5y \geq -2x + 10 \\ \rightarrow \frac{-5y}{-5} \geq \frac{-2x + 10}{-5} \end{array} \leftarrow$$

$$y \leq \frac{2}{5}x - 2$$



* When I \cdot or \div by
a NEGATIVE # I

MUST Flip the $\leq \geq$ *

$$2x - 5y \geq 10$$

$$\begin{array}{l} (0, 0) \\ x \quad y \end{array} \quad 2(0) - 5(0) \geq 10$$

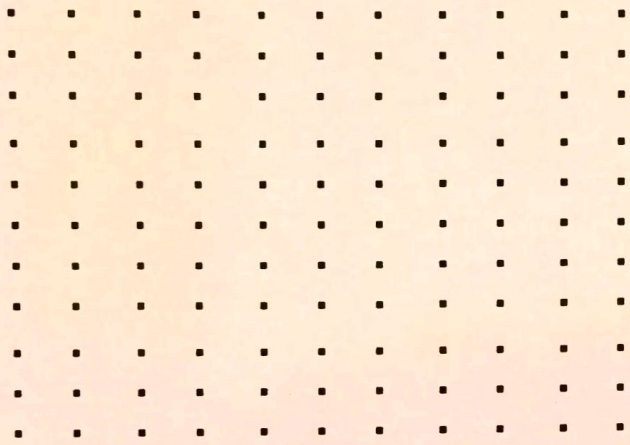
$$0 - 0$$

$$0 \geq 10$$

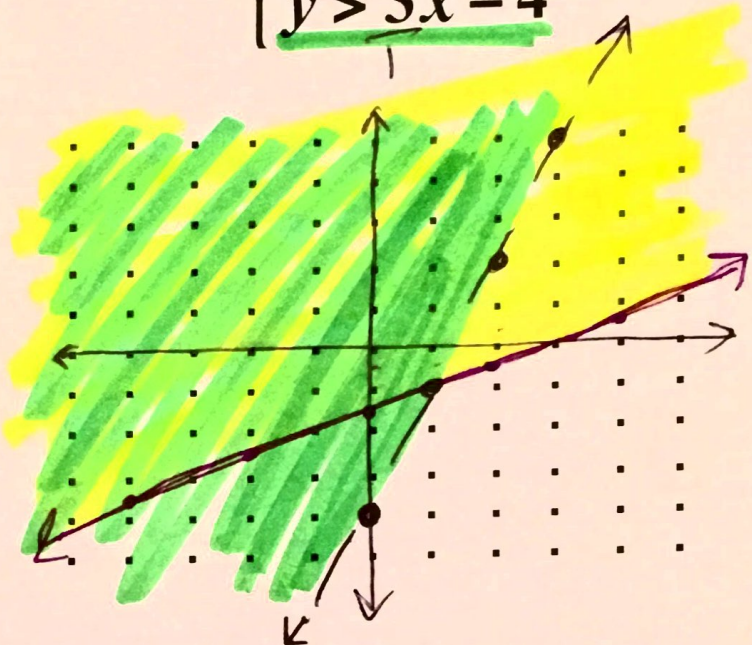
False.

Graphing a System of Linear Inequalities.

Ex 8:
$$\begin{cases} y \geq -3x - 1 \\ y < x + 2 \end{cases}$$



Ex 9:
$$\begin{cases} x - 2y \leq 3 \\ y > 3x - 4 \end{cases}$$



$0 \leq 3$ True.

$0 - 2(0) \leq 3$
 $0 - 0$

$y > 3x - 4$

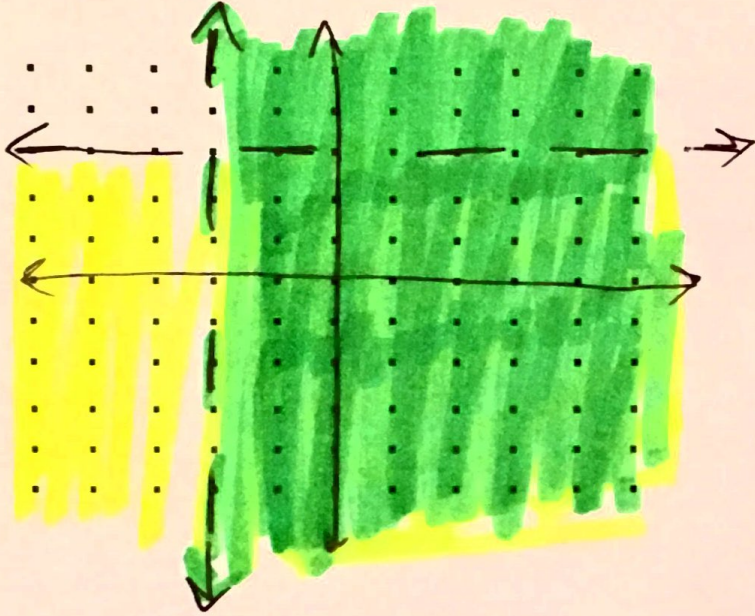
$0 > 3(0) - 4$

$0 > 0 - 4$

$0 > -4$ True.

$$\begin{array}{r} |x - 2y| \leq 3 \\ \hline -x \qquad -1x \\ \hline -2y \leq -1x + 3 \\ \div -2 \quad \div -2 \\ \hline y \geq \frac{1}{2}x - \frac{1}{2} \end{array}$$

Ex 10:
$$\begin{cases} y < 3 & 0 < 3 \\ x > -2 & 0 > -2 \end{cases}$$



Ex 11:
$$\begin{cases} 2x - y > 4 \\ 2x - y < -3 \end{cases}$$

