

Unit 3:
A-REI.3

Inequalities in two Variables

Objective: To graph inequalities in a coordinate plane.

To shade the appropriate side of the inequality.

Vocabulary

Half-planes - Regions above the line and below the line.

Boundary line - The line we graph.

Note:

$<$ or $>$: dashed lines 

\leq or \geq : solid lines 

$<$ or \leq : Shade below or left

$>$ or \geq : Shade above or right

} when
 $x \geq \#$
or $x \leq \#$

2. Identify your Slope (m) and y-int (b).
3. Identify if its a Solid or dash line
4. Identify if we shade below or above y-int

for x if its left or right of x.

Ing. Symbol tells you this

SOLID LINE

\geq or \leq

DASHED LINE

$>$ or $<$

SHADE ABOVE y-int

\geq or $>$
greater

\leq or $<$
less than

SHADE BELOW y-int

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

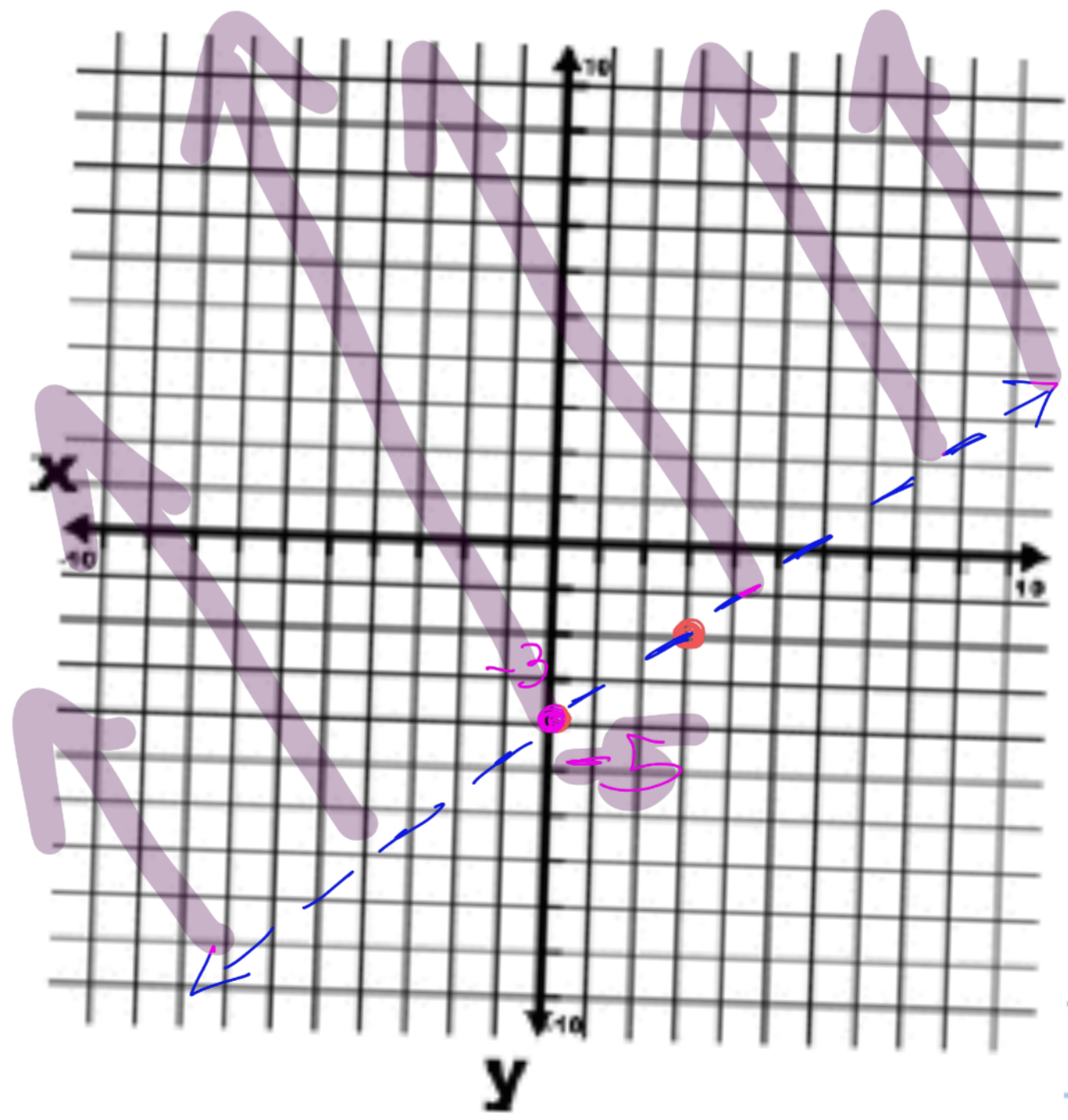
NOTE: If you divide by -# you switch the inequality sign.

$$\frac{-2x}{-3} < \frac{-2x + 12}{-3}$$

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

b = -4 m = 2/3

dashed / above y-int



Ex 1 (I do)

Graph $x + y < 4$ on a plane.

Steps to help in graphing:

①

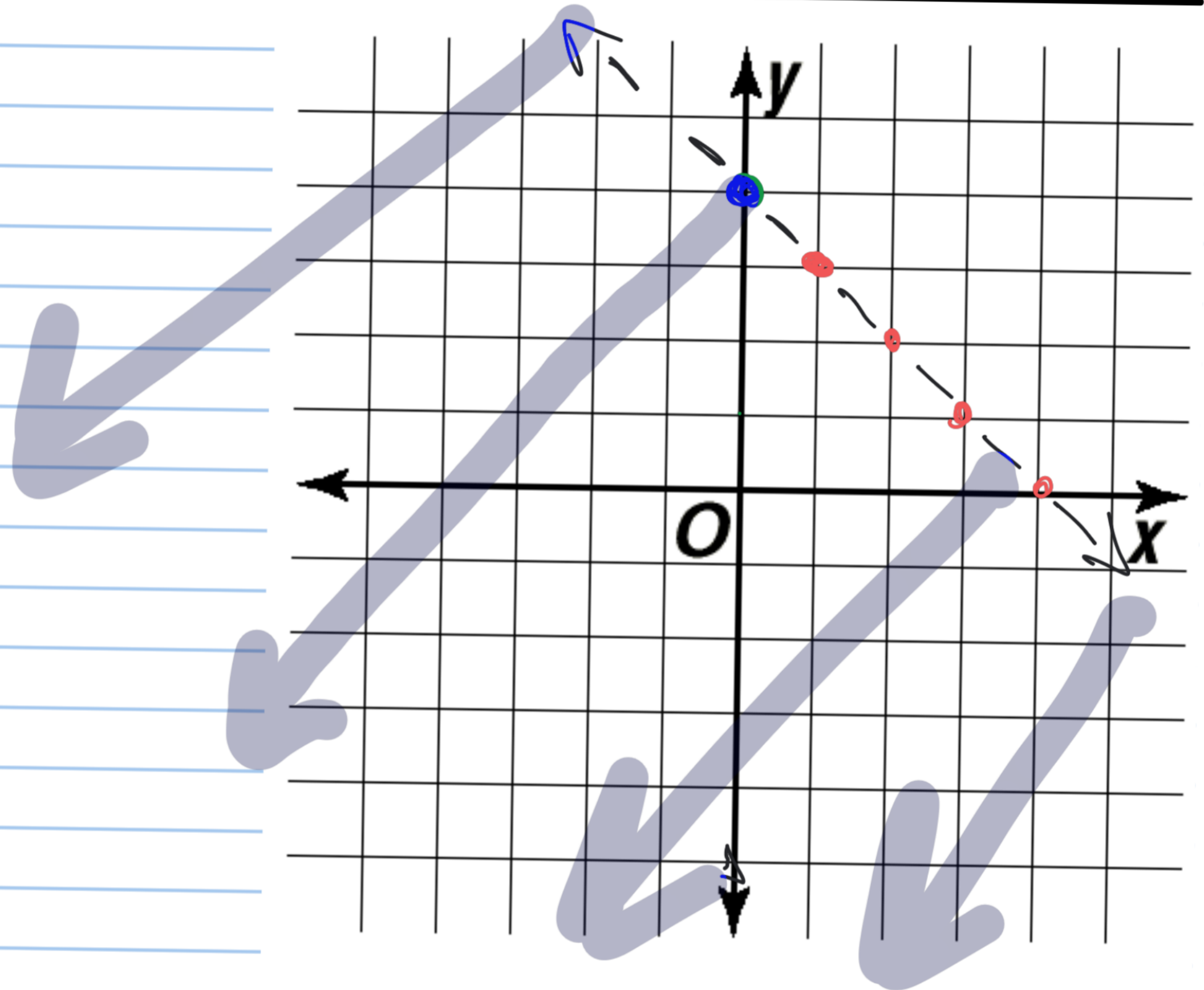
Solve y :

$$\begin{array}{r} x + y < 4 \\ -x \quad -x \\ \hline y < -x + 4 \end{array}$$

$$y < -x + 4$$

dashed / below
y-int

$$b = 4 \quad m = -1 \begin{array}{l} \downarrow \\ \rightarrow \end{array}$$



What does the shaded area mean?

Graph $y - 2x \geq 0$ on a plane.

1 (We do)

Steps to help in graphing:

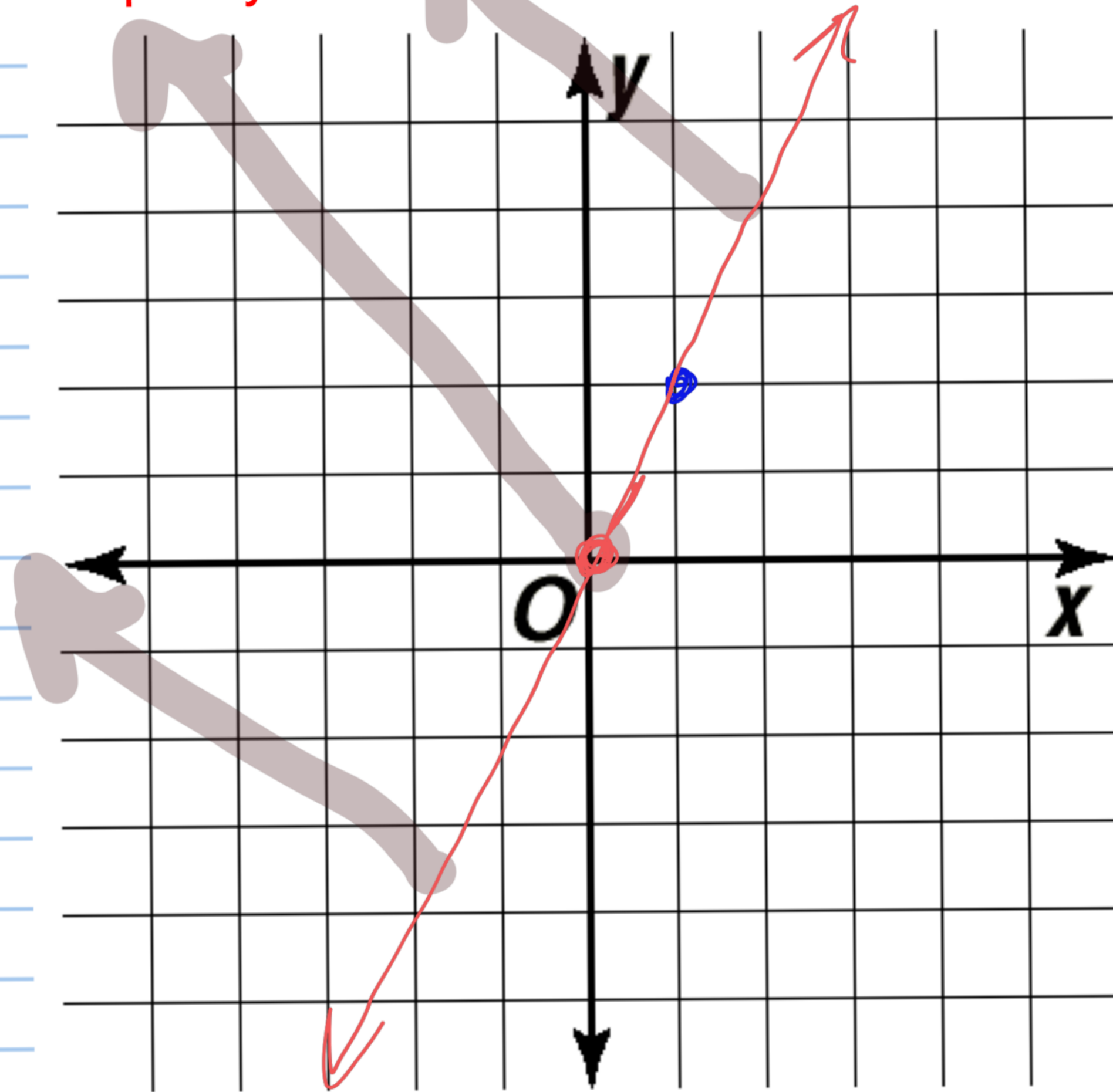
$$\begin{array}{r} y - 2x \geq 0 \\ \hline +2x \quad +2x \end{array}$$

$$y \geq 2x + 0$$

↑
solid / above

$$b = 0 \quad m = \frac{2 \uparrow}{1 \rightarrow}$$

Before you graph, can you determine the steepness (slope) of the inequality?



Ex 1 (You do)

Graph $2x + y < 4$ on a plane.

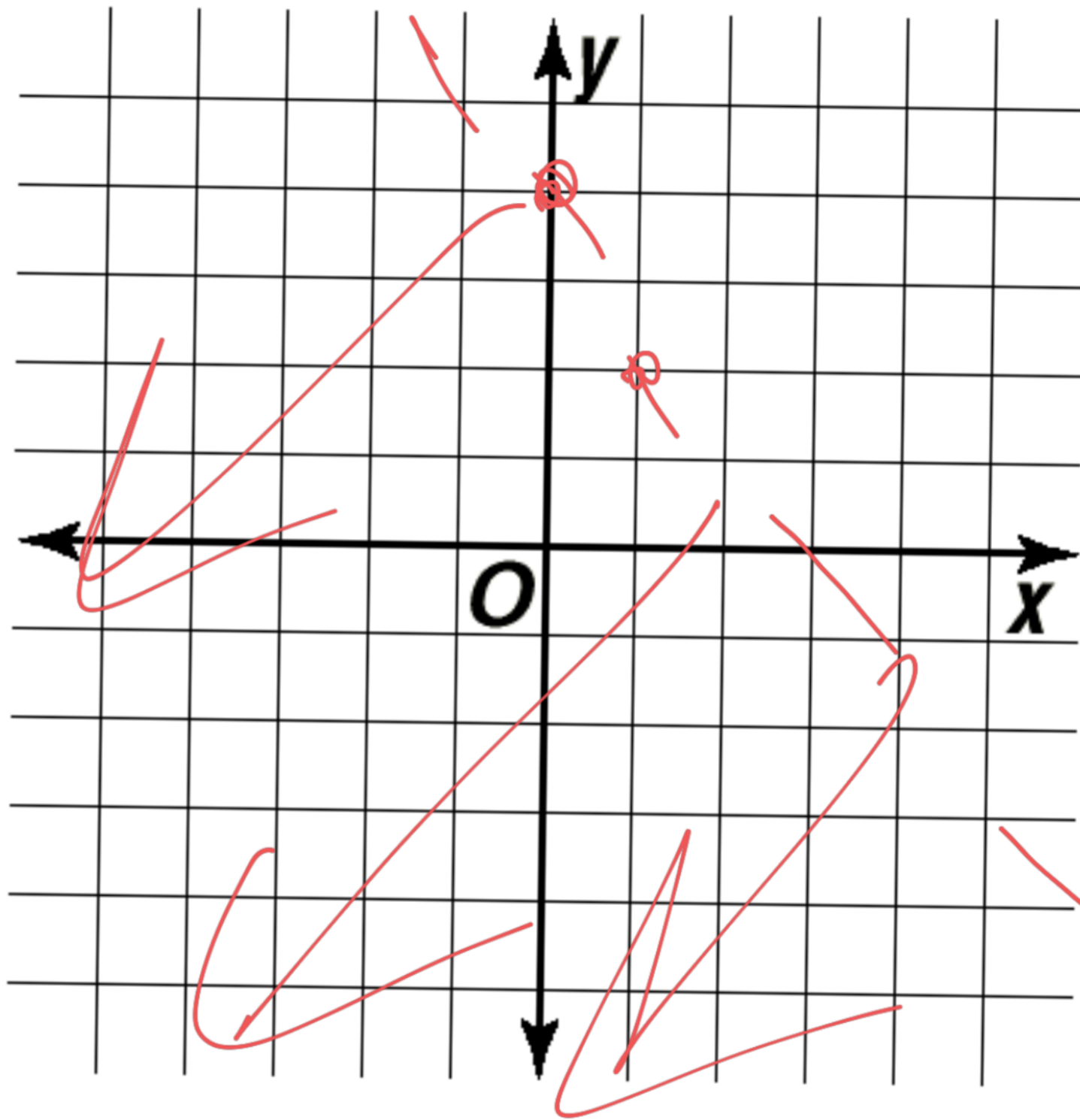
Write Down Steps:

$$y < -2x + 4$$

dashed / below

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

$$b = 4$$

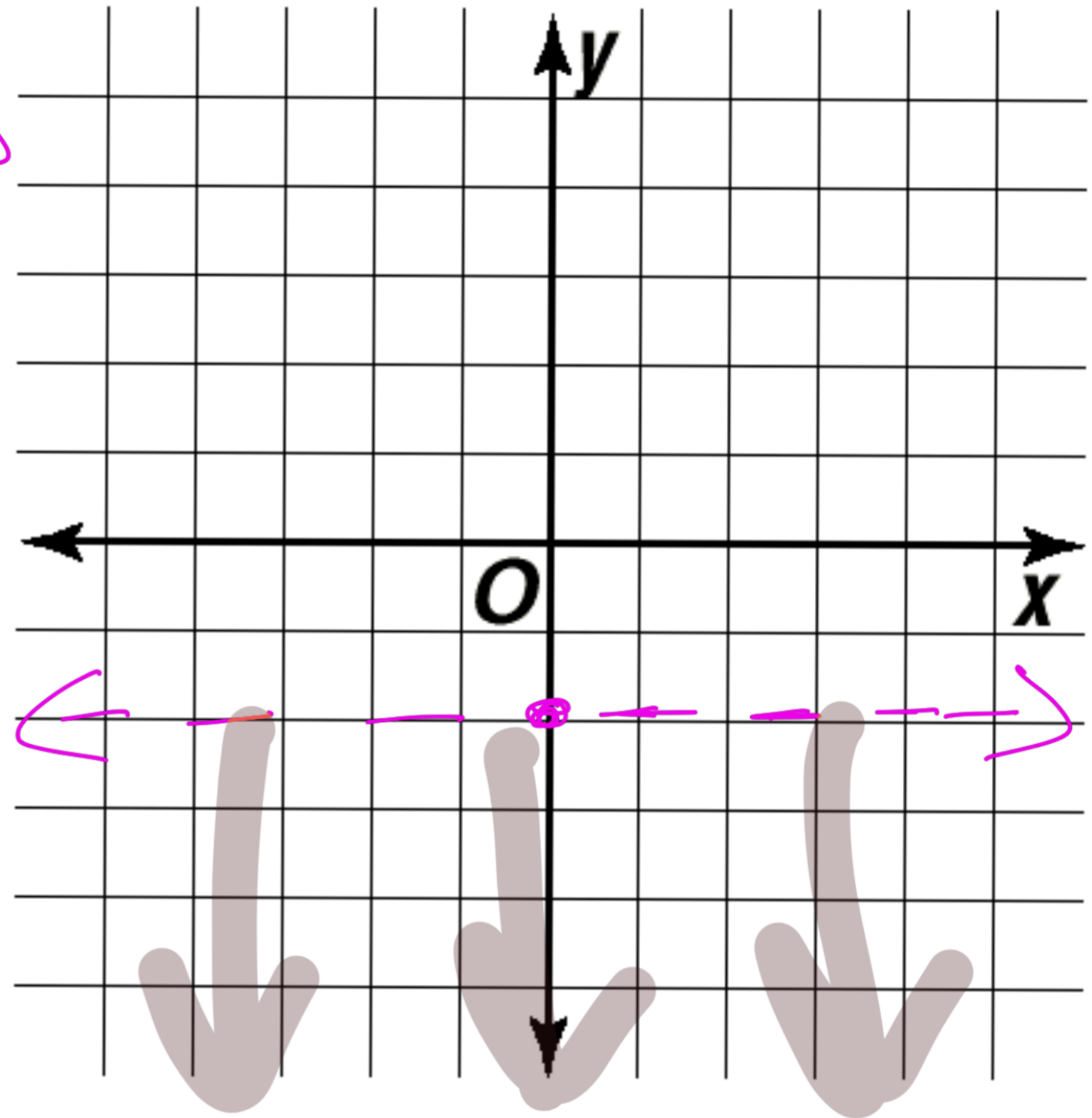


Ex 2 (I do)

Graph $y < -2$ on a plane.

Write Down Steps:

$y < -2$ → dashed/below
It is
a horizontal
line through
-2 on
the y-axis



What does the shaded area mean?

Ex 3(I do)

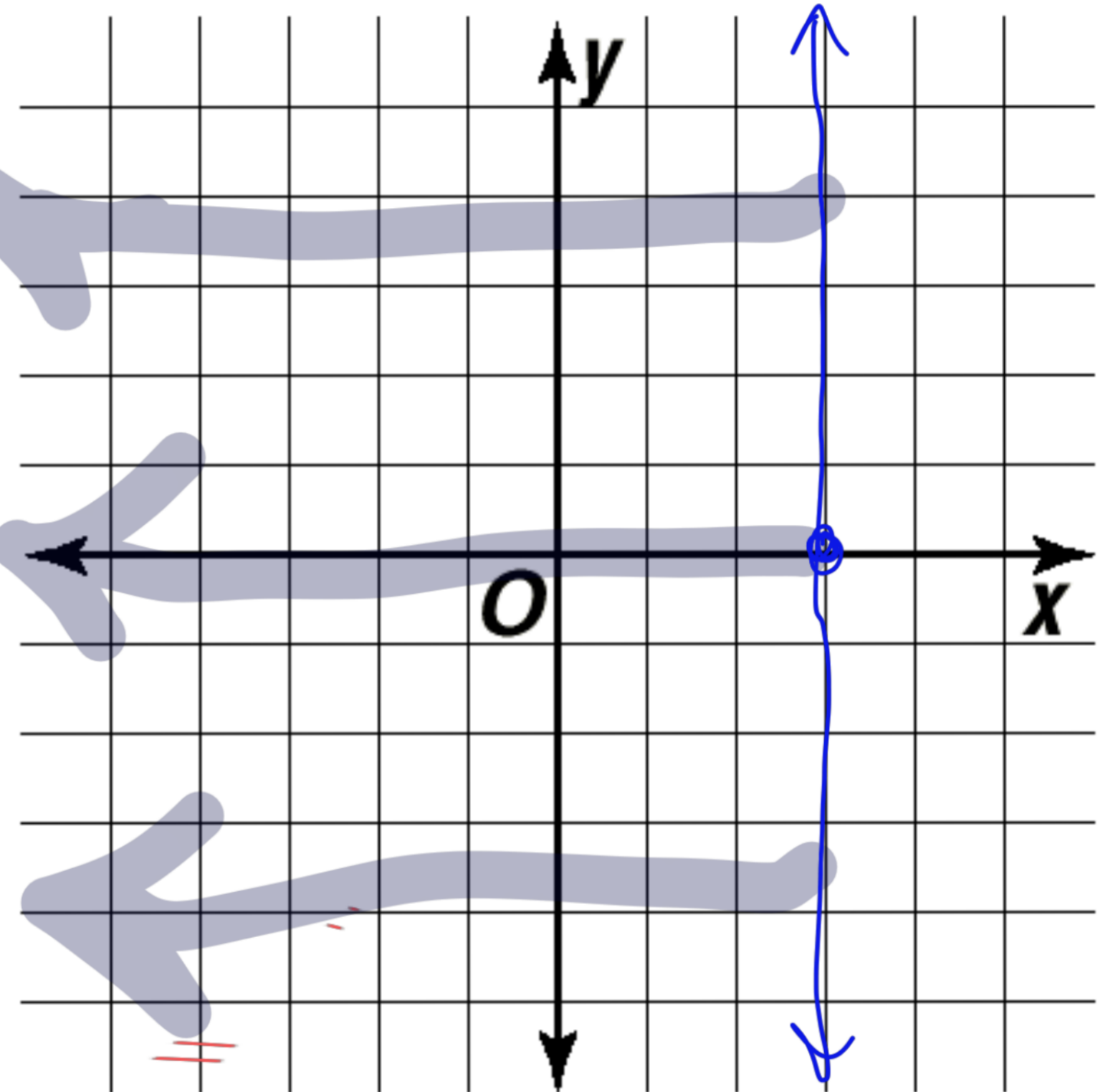
Graph $x \leq 3$ on the plane.

Write Down Steps:

$$x \leq 3$$

→ solid / left
of x pt.

It is a
vertical
line @ "x"
point 3.



What does the shaded area mean?