

# WARMUP

Graph

$m = \frac{2}{3}$     $y\text{-int} = -2$

1)  $y = \frac{2}{3}x - 2$

2)  $y = -\frac{5}{2}x + 3$

3)  $3x + 2y = 6$

x-int  
ignore y part

$3x = 6$

$x = 2$

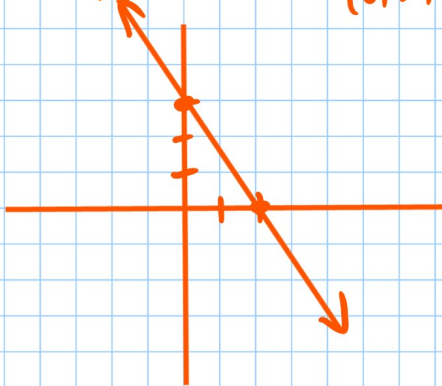
$(2, 0)$

y-int  
ignore x part

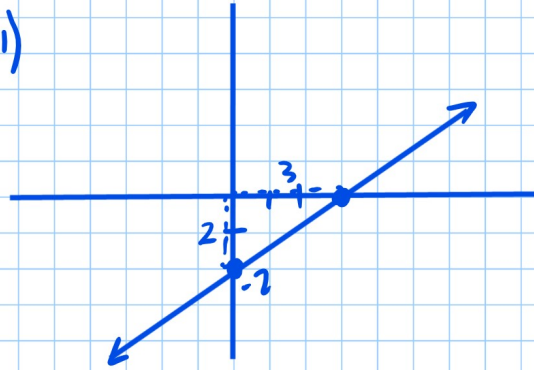
$2y = 6$

$y = 3$

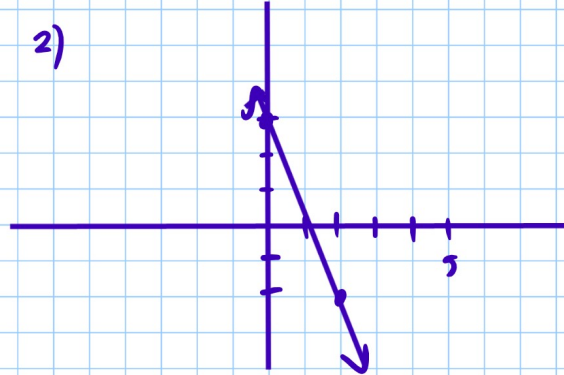
$(0, 3)$



1)



2)



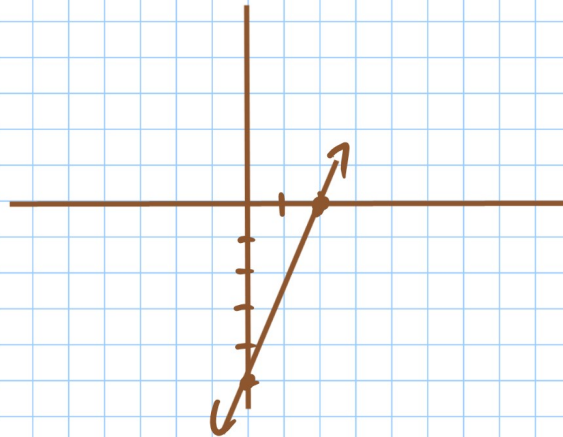
4)  $5x - 2y = 10$

x-int  
 $5x = 10$

$x = 2$

y-int  
 $-2y = 10$

$y = -5$



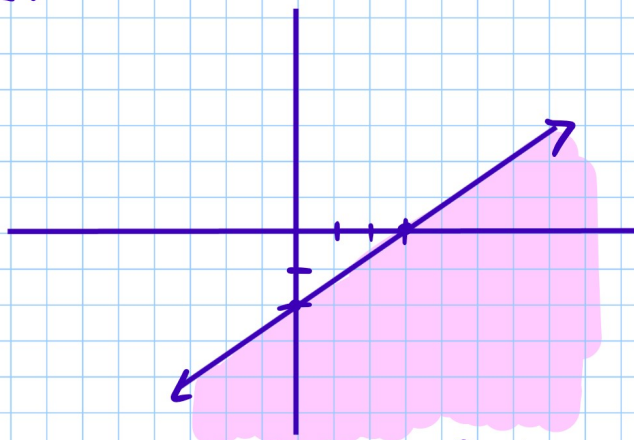
## Section 9.4 Linear Inequalities in Two Variables

ex:  $2x - 3y \geq 6$

STEP 1 Graph the corresponding equation. Use a solid line for  $\geq$  or  $\leq$  and a dashed line for  $>$  or  $<$ .

$$2x - 3y = 6$$

<u>x-int</u>	<u>y-int</u>
$2x = 6$	$-3y = 6$
$x = 3$	$y = -2$
$(3, 0)$	$(0, -2)$



STEP 2: Choose a test point in one of the half-planes (it can't be on the line). Test it to see if it works in the inequality.

Test  $(0, 0)$

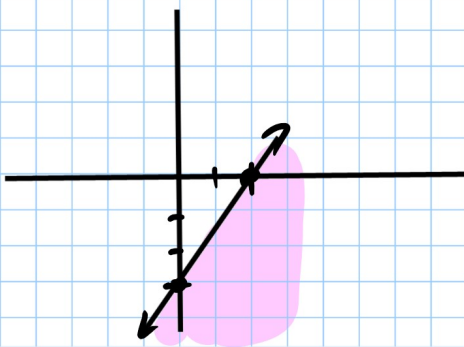
$$2x - 3y \geq 6$$
$$2 \cdot 0 - 3 \cdot 0 \geq 6$$
$$0 - 0 \geq 6$$
$$0 \geq 6 \text{ False}$$

STEP 3: If your test point yields a true inequality, shade the region that has the test point.

If your test point yields a false inequality, shade the region that doesn't have the test point.

ex:  $4x - 2y \geq 8$

<u>x-int</u>	<u>y-int</u>
$4x = 8$	$-2y = 8$
$x = 2$	$y = -4$
$(2, 0)$	$(0, -4)$



Test  $(0, 0)$

$$4 \cdot 0 - 2 \cdot 0 \geq 8$$
$$0 \geq 8$$

False

ex:  $y > \frac{1}{4}x - 3$   
          ↑          ↑  
           $m = \frac{1}{4}$    $b = -3$

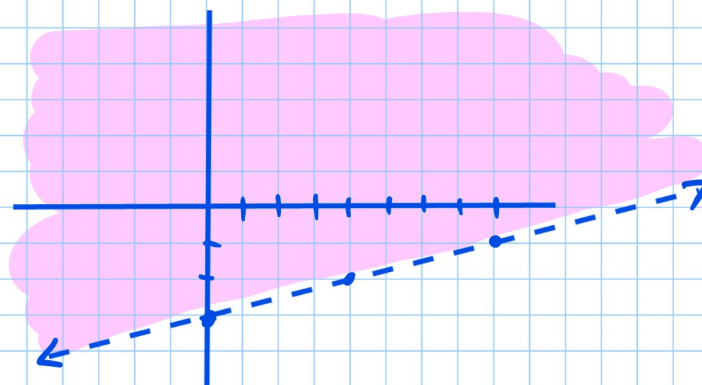
Test  $(0, 0)$

$$0 > \frac{1}{4} \cdot 0 - 3$$

$$0 > 0 - 3$$

$$0 > -3$$

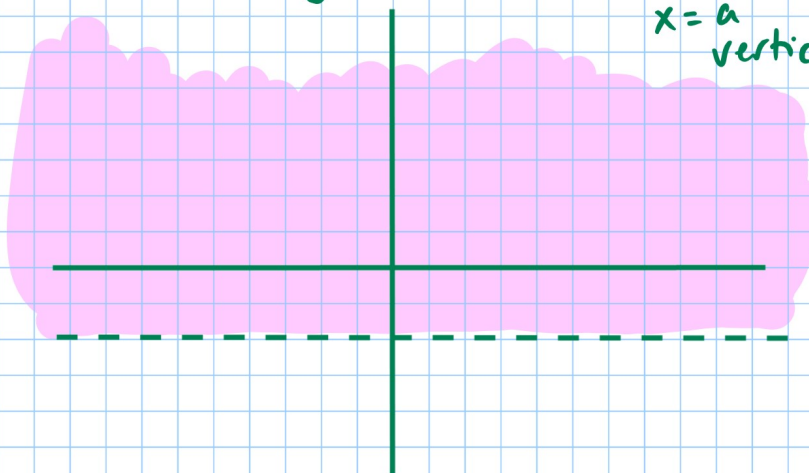
True



ex:  $y > -2$

$y = b$   
horizontal

$x = a$   
vertical



Packet 1-8

Desmos