

**Algebra:** Please clear your desk except for...

1. Assignment 32
2. Pencil, Ruler, and Graph Paper



Solve the following equations.

$$1. \frac{3}{4}|x-3|=6 \quad 2. 4|2y+5|+9=5$$

$$3. |3z+1|-6=-2$$

$$1. \frac{3}{4}|x-3|=6$$

$$\times \frac{4}{3} \qquad \times \frac{4}{3}$$

$$|x-3|=8$$



$$x-3=8 \text{ or } x-3=-8$$

$$x=11 \text{ or } x=-5$$

$$x = -5, 11$$

$$2. 4|2y+5|+9=5$$

$$4|2y+5|=-4$$

$$|2y+5|=-1$$

I

No real solution

$$3. |3z+1|-6=-2$$

$$|3z+1|=4$$

III

$$3z+1=4 \quad \text{or} \quad 3z+1=-4$$

$$3z=3$$

$$3z=-5$$

$$z=1$$

or

$$z=-\frac{5}{3}$$

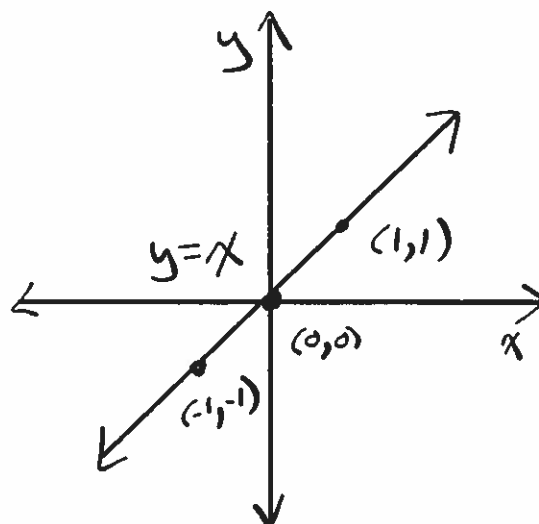
$z = -\frac{5}{3}, 1$

## Graphing Linear Inequalities in Two Variables

Graph  $y = x$ 

What is a solution to  $y = x$ ?

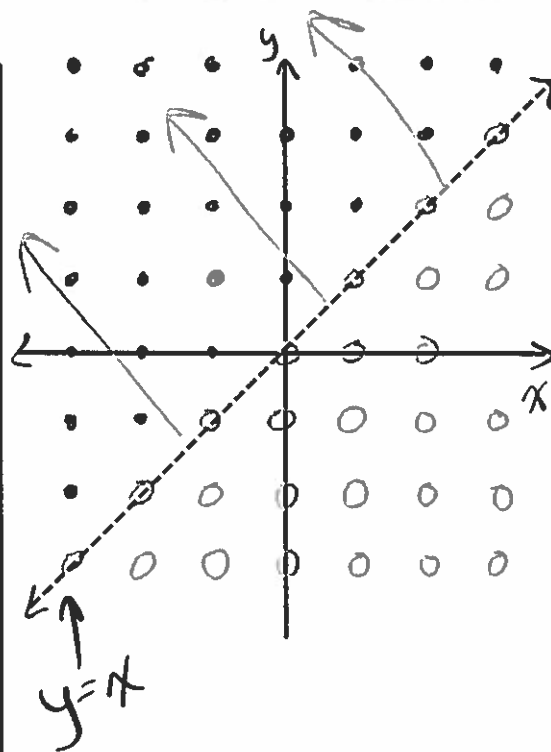
1. A set of coordinates (ordered pair) that makes the sentence true
2. A point on the line

Ex 1: Graph  $y > x$ 

What is a solution to?  $y > x$

1. A set of coordinates (ordered pair) that makes the sentence true

2. A point on the graph  
[Half Plane]



Ex 2: Graph  $y \geq 2x - 1$ 

1. Graph the boundary line.

$$y = 2x - 1 \quad [\geq \rightarrow \text{Solid line}]$$

$$m = 2 \quad y\text{-int} = (0, -1)$$

2. Check points to determine the half-plane to shade.

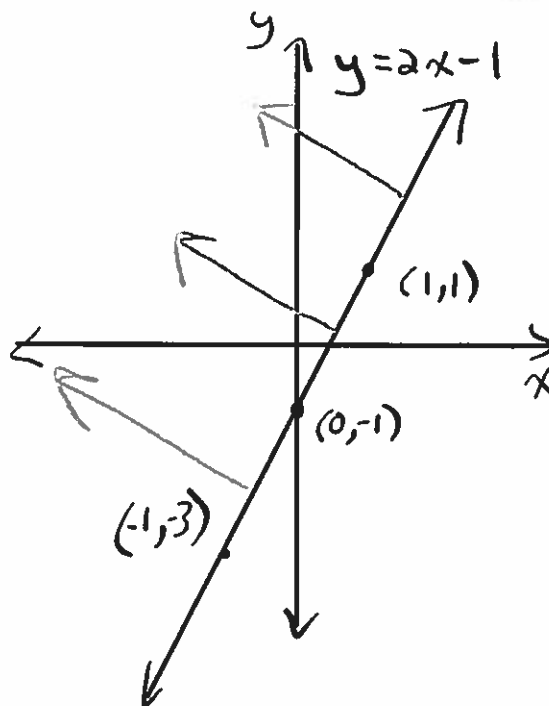
$$(0, 0) \quad 0 \geq 2(0) - 1$$

$$0 \geq -1 \quad \text{True}$$

Shade above

$$(1, 0) \quad 0 \geq 2(1) - 1$$

$$0 \geq 1 \quad \text{False}$$

Ex 3: Graph  $3x - 5y > 15$ 

1. Graph the boundary line.

$$3x - 5y = 15 \quad [> \rightarrow \text{Dotted line}]$$

$$x\text{-int: } y = 0 \quad 3x = 15 \quad (5, 0)$$

$$x = 5$$

$$y\text{-int: } x = 0 \quad -5y = 15 \quad (0, -3)$$

$$y = -3$$

2. Check points to determine the half-plane to shade.

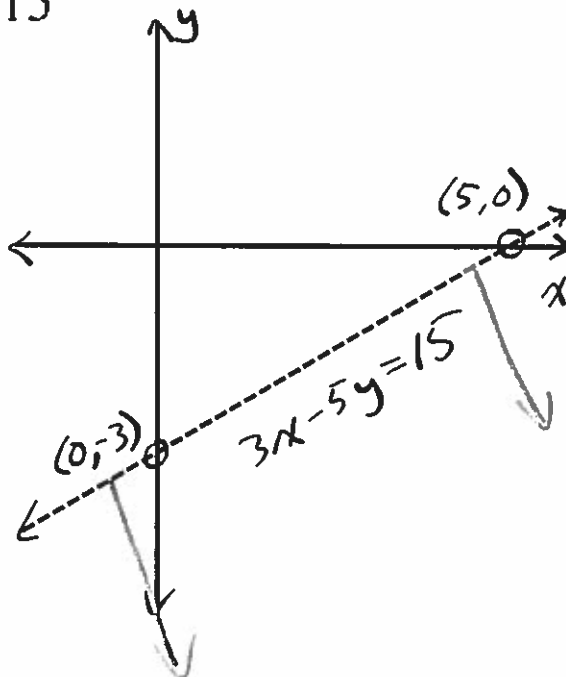
$$(0, 0) \quad 3(0) - 5(0) > 15$$

$$0 > 15 \quad \text{False}$$

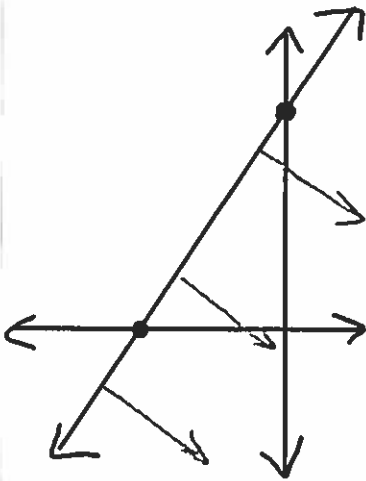
$$(0, -4) \quad 3(0) - 5(-4) > 15$$

$$20 > 15 \quad \text{True}$$

Shade below



Ex 4: Write an inequality for the graph.



1. Determine the equation of the boundary line.

$$(0, 3) \rightarrow b = 3$$

$$m = \frac{\Delta y}{\Delta x} = \frac{3}{2} \quad y = \frac{3}{2}x + 3$$

2. Determine the correct inequality.

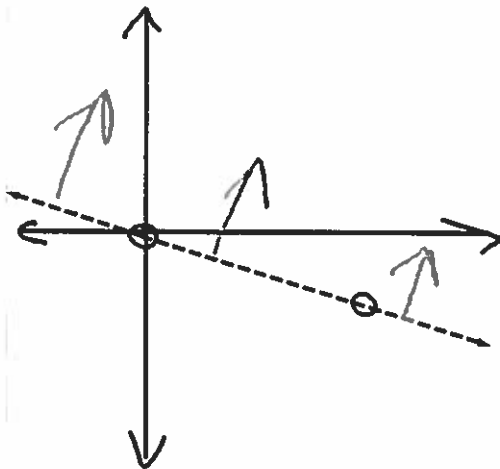
⊙ Solid line  $\rightarrow \geq$  or  $\leq$

⊙ Check  $(0, 0)$

$$\odot 0 \leq \frac{3}{2}(0) + 3$$

$$\odot \boxed{y \leq \frac{3}{2}x + 3}$$

Ex 5: Write an inequality for the graph.



1. Determine the equation of the boundary line.

$$(0, 0) \rightarrow b = 0$$

$$m = \frac{\Delta y}{\Delta x} = -\frac{1}{3} \quad y = -\frac{1}{3}x$$

2. Determine the correct inequality.

Dotted Line  $\rightarrow >$  or  $<$

Use  $(1, 1)$

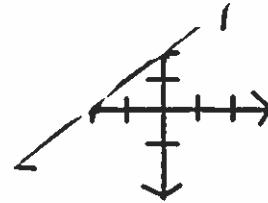
$$1 \not\geq -\frac{1}{3}(1)$$

$$1 \not\geq -\frac{1}{3}$$

$$\boxed{y > -\frac{1}{3}x}$$

Spiral Notebook - Complete the following.

1. Write an inequality for the graph to the right.



2. Graph  $y < -2x + 3$

3. Graph  $3x - 4y \geq 12$



1. Determine the equation of the boundary line:

$(0, 2)$  and  $m = 1$       Equation:  $y = x + 2$

Determine the Inequality: Solid Line means  $\leq$  or  $\geq$

Check  $(0, 3)$ : Inequality:  $3 \geq 0 + 2$

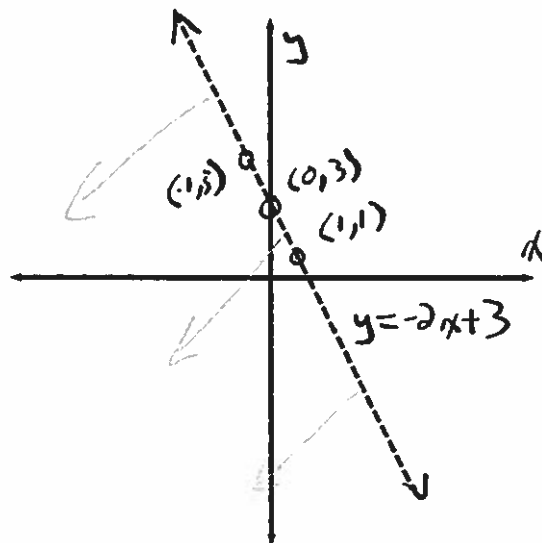
2. Graph  $y < -2x + 3$

$y = -2x + 3$   $(0, 3)$   
 $m = -2$

$<$  → dotted line

$(0, 0)$   $0 < -2(0) + 3$   
 $0 < 3$  True, shade below

$(2, 0)$   $0 < -2(2) + 3$   
 $0 < -1$  False



3. Graph  $3x - 4y \geq 12$

$$3x - 4y = 12 \quad \leftarrow \text{Solid line}$$

$$x\text{-int: } y = 0 \quad 3x = 12 \quad (4, 0)$$

$$x = 4$$

$$y\text{-int: } x = 0 \quad -4y = 12 \quad (0, -3)$$

$$y = -3$$

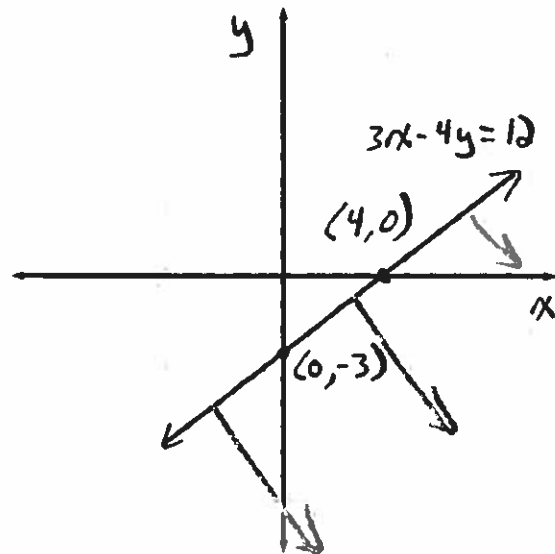
$$(0, 0) \quad 3(0) - 4(0) \geq 12$$

$$0 \geq 12 \quad \text{False}$$

$$(5, 0) \quad 3(5) - 4(0) \geq 12$$

$$15 \geq 12 \quad \text{True}$$

Shade below



Assignment 33:

Part I: p. 409-410 #15-18, 23-24, 37-38, 44

Part II: Solving Absolute Value  
Equations Practice #1-12