C11 - 9.1 - Linear Inequalities In Two Variables Notes

Graph the following Inequality

$y > x - 2$ Graph: $y = x - 2$

$y = mx + b$

<,> (Open Dots, Dotted line)

Test Point

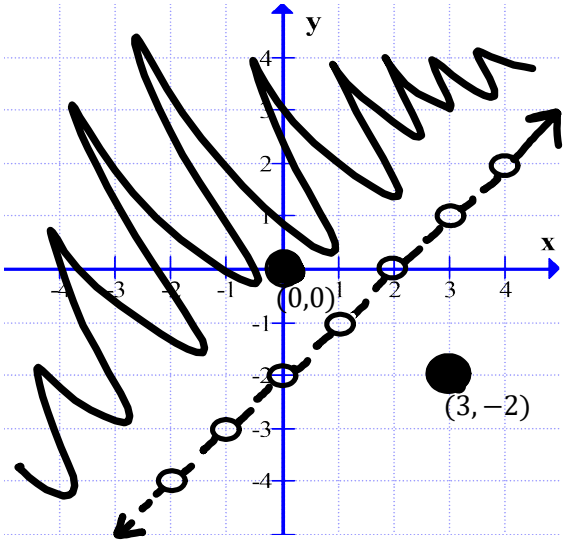
(x, y)
$(0,0)$

Choose a Point on either side of the Line

Zero-Zero Test*

$y > x - 2$
$0 > 0 - 2$
$0 > -2$ ✓ Substitute for x and y.

Correct: Shade the $(0,0)$ side of the line.



$y > x - 2$

Find Equation

Test Point		Equation	
y	$x - 2$	y $mx + b$	(x, y)
0	$0 - 2$	**"Space"**	$(0,0)$
0	-2		
$0 > -2$ ✓		Make a correct Statement	
$y > x - 2$		y $x - 2$	

Test Point (x, y) $(3, -2)$ $y > x - 2$ $-2 > 3 - 2$ $-1 > 1$ ✗

OR

Incorrect: Shade the Not $(3, -2)$ side of the line.

Isolate for y or TOV $y = mx + b$

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

OR

$x - y \geq 2$
$x - 2 \geq y$
$y \leq x - 2$

Add y
Subtract 2
Mirror

(Both Sides)

Subtract x
Divide* by -1
Change Sign!

Graph the following Inequality

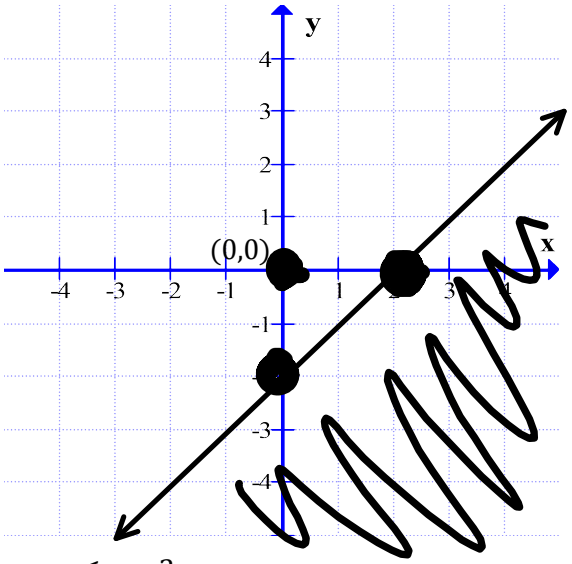
$y \leq x - 2$ Graph $y = x - 2$

≤,≥ (Closed Dots, Solid Line)

Test Point $(0,0)$

$y \leq x - 2$
$0 \leq 0 - 2$
$0 \leq -2$ ✗

Incorrect: Shade "Not" the $(0,0)$ side of the line.



$y \leq x - 2$

Find Equation

Test Point		Equation	
y	$x - 2$	y $mx + b$	(x, y)
0	$0 - 2$	**"Space"**	$(0,0)$
0	-2		
$0 \leq -2$ ✗		Make a Incorrect Statement	
$y \leq x - 2$		y $x - 2$	

Notice: the (0,0) test only works if (0,0) is not on the line. If (0,0) is on the line we must choose a distinct point that is not on the line like (5,0) or (0,2).

OR "Shade" above/below than "the line"

Replace the word y *with "shade"*
Greater than = above/Less than = below
Replace the equation with "the line"