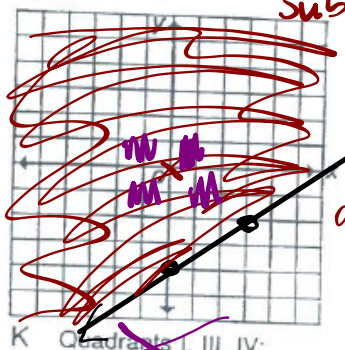
Homework Questions . . .

(7) $2x - 3y \leq 12$



K Quadrants I, III, IV; excludes boundary line.

U Quadrants II, III, IV; includes boundary line.

I All four quadrants; includes boundary line.

Sub Test (0,0)

$\leq$	
$2(0) - 3(0)$	12
0	yes

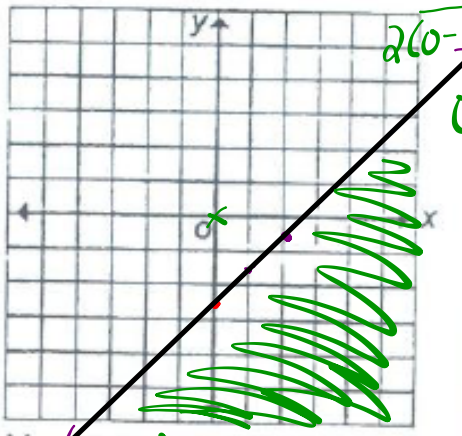
$2x - 3y = 12$

$-3y = -2x + 12$

$\frac{-3y}{-3} = \frac{-2x}{-3} + \frac{12}{-3}$

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

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



Test (0,0)

LS ≥ RS

2(0-0)	5
0	No

$2(x-y)=5$

$2x-2y=5$

$-2y=-2x+5$

$-2 \quad -2 \quad -2$

$y=\frac{1}{1}x-2.5$

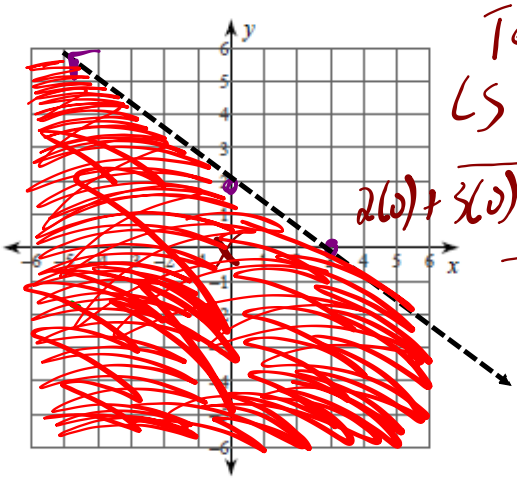
Y All four quadrants; excludes boundary line.

U Quadrants II, III, IV; includes boundary line.

A Quadrants I, III, IV; includes boundary line.

WAMRKM UP...

$$2x+3y-6<0$$



Test

LS < RS

$2(0)+3(0)-6$	0
-6	yes

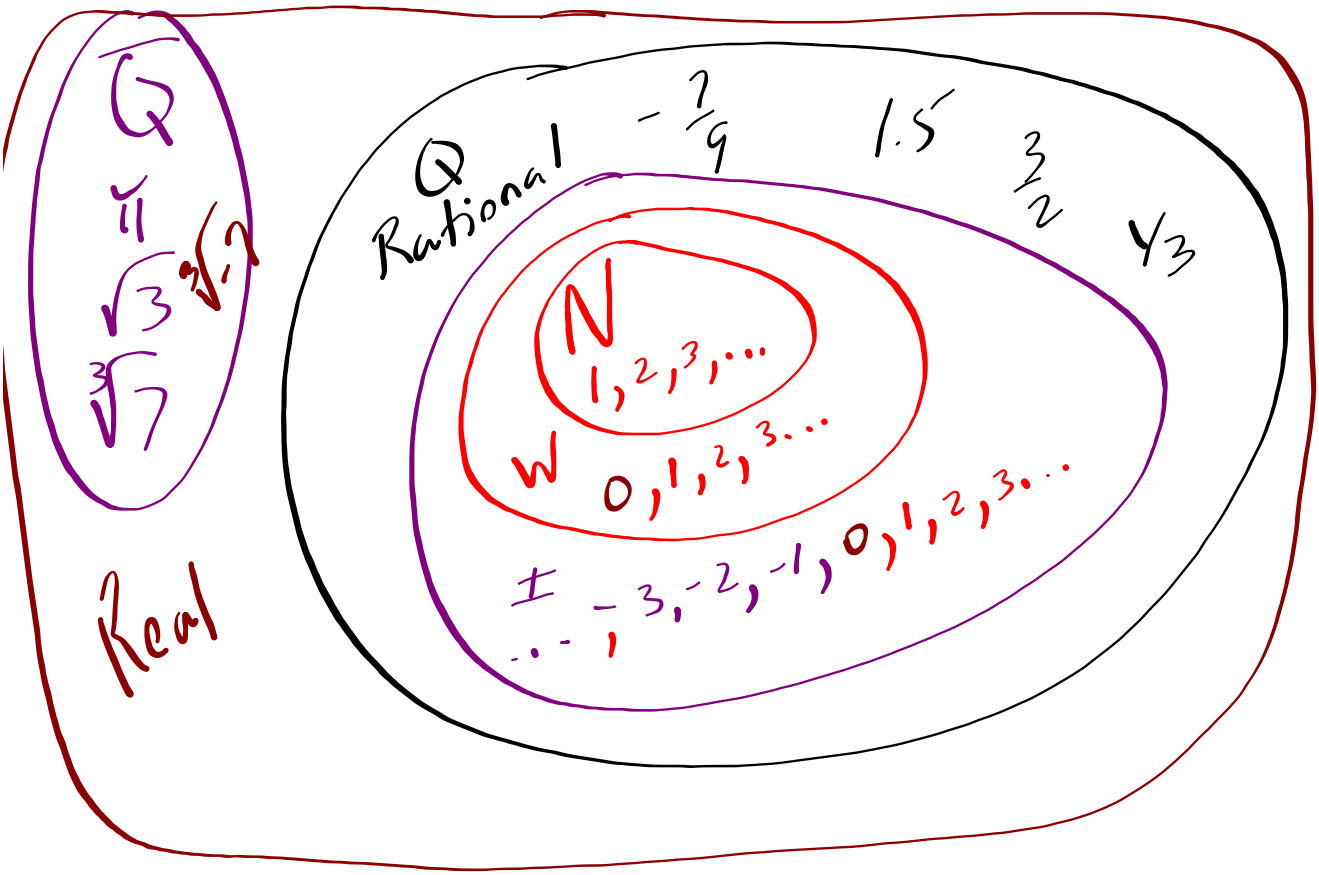
$2x+3y-6=0$

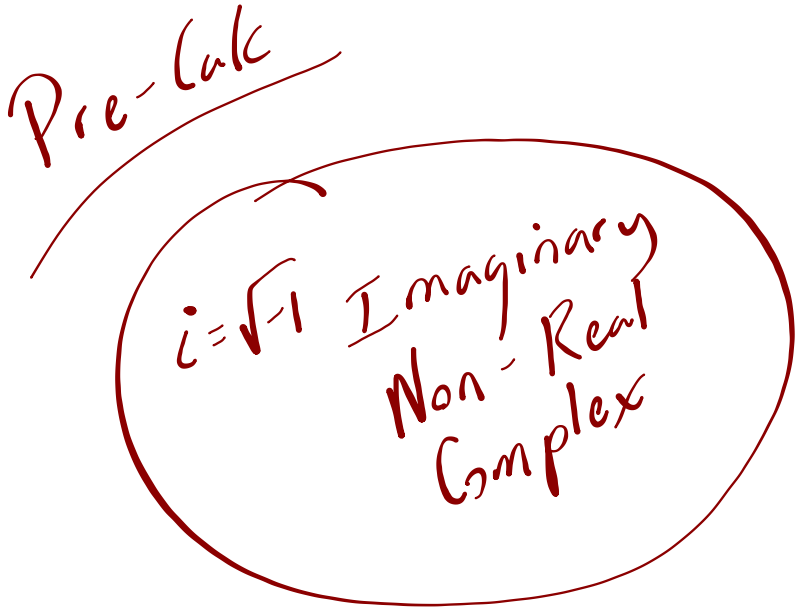
$\frac{3y}{3} = \frac{-2x}{3} + \frac{6}{3}$

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

RISE / RUN

y int


Q
π
√3
∛2
∛7
Real
Q Rational
-2/9
1.5
3/2
4/3
N
1, 2, 3, ...
W
0, 1, 2, 3...
±
..., -3, -2, -1, 0, 1, 2, 3...


Pre-Calc
$i = \sqrt{-1}$ Imaginary
Non-Real
Complex

Graphs of Linear In-Equalities

Sometimes the domain and range are stated as being in the set of integers. This means that the solution set is **discrete** and consists of separate or distinct parts. Discrete variables represent things that can be counted, such as people in a room. This means that the solution region is not shaded but rather stippled with points. DOTS

So when interpreting the solution region for a linear inequality, consider the restriction on the domain and range of the variables.

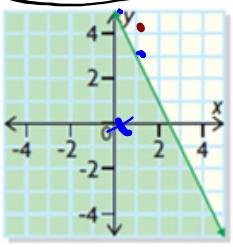
If the solution set is **continuous**, all the points in the solution region are in the solution set. (Shaded) Real

If the solution set is **discrete**, only specific point in the solution region are in the solution set. This is represented graphically by stippling. N, W, I

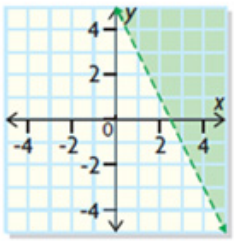
Some solution sets may be restricted to specific quadrants. For example, most linear inequalities representing real-world problem situations have graphs that are restricted to the first quadrant.

Here are some examples: sets $\rightarrow \{(x,y) \mid y \leq -2x+5, x \in R, y \in R\}$ (Points; such that; belongs)

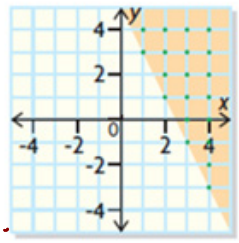
$\{(x, y) \mid y \leq -2x + 5, x \in R, y \in R\}$



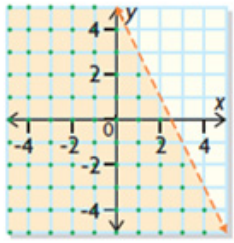
$\{(x, y) \mid y > -2x + 5, x \in R, y \in R\}$



$\{(x, y) \mid y \geq -2x + 5, x \in I, y \in I\}$



$\{(x, y) \mid y < -2x + 5, x \in I, y \in I\}$



Let's do a couple more...

1) $\{(x,y) \mid 2x+5y \le -20, x \varepsilon I, y \varepsilon I\}$ Stipple

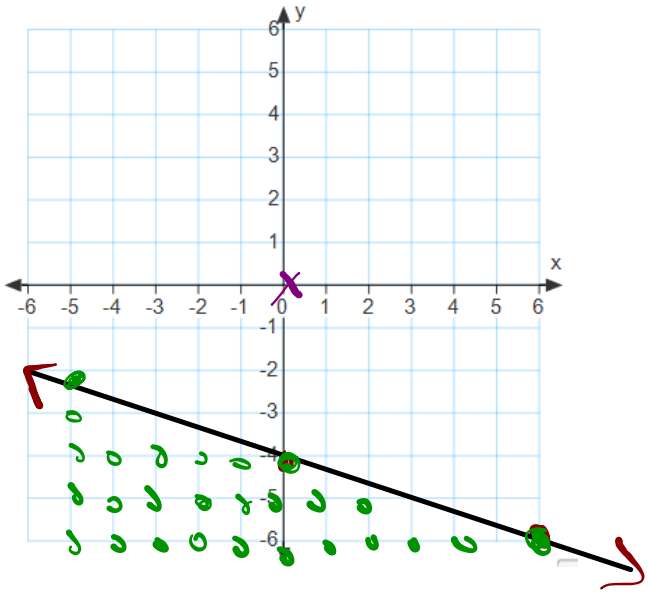
LS ≤ RS

$2(0)+5(0)$	-20
0	No

$2x+5y=-20$

$\frac{5y}{5} = \frac{-2x}{5} - \frac{20}{5}$

$y = \frac{-2}{5}x - 4$



2) $\{(x,y) \mid 3x+4y > 4, x \varepsilon W, y \varepsilon W\}$ Dashed Dots Q1

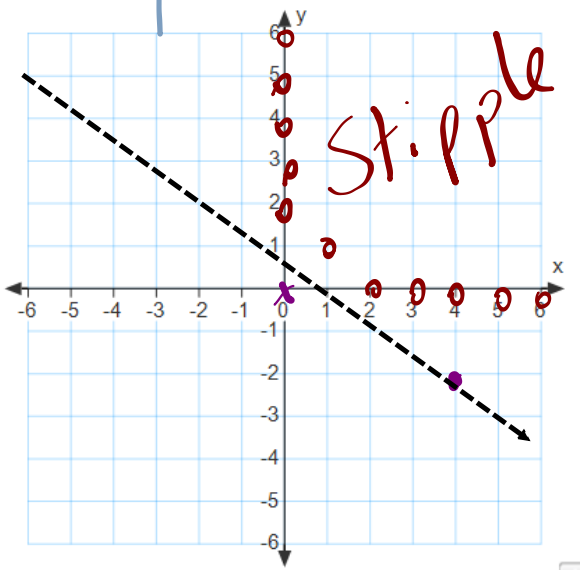
LS > RS

$3(0)+4(0)$	4
0	No

$4y = -3x+4$

$\frac{4y}{4} = \frac{-3x}{4} + \frac{4}{4}$

$y = \frac{-3}{4}x + 1$



MORE PRACTICE...

Worksheet - Graphing Inequations with 2 variables.pdf

Worksheet Solutions

Attachments

Worksheet - Graphing Inequations with 2 variables.pdf

Worksheet - Graphing Linear Inequalities.pdf