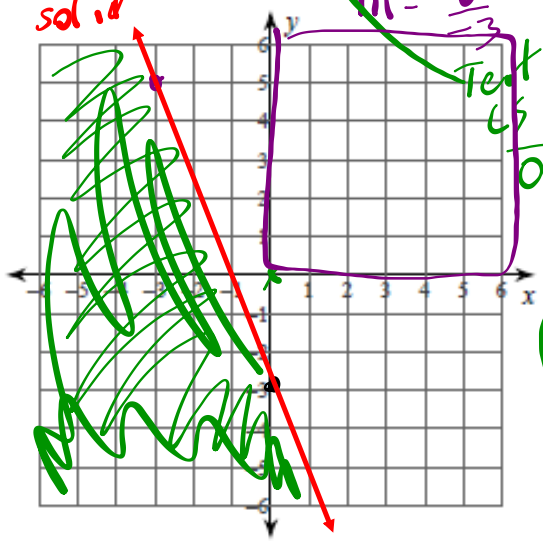
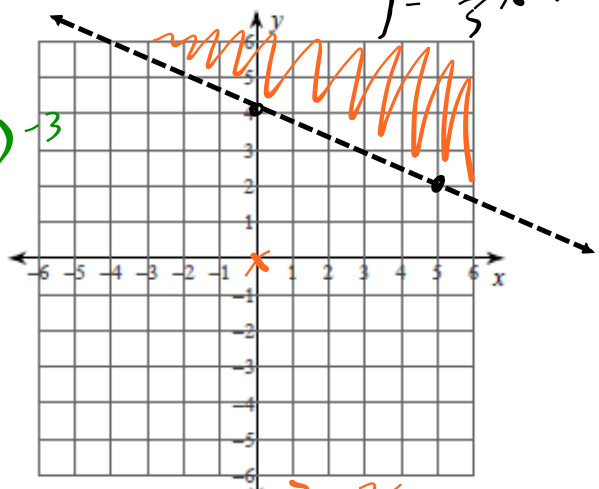
WARM-UP: Graph each of the following...

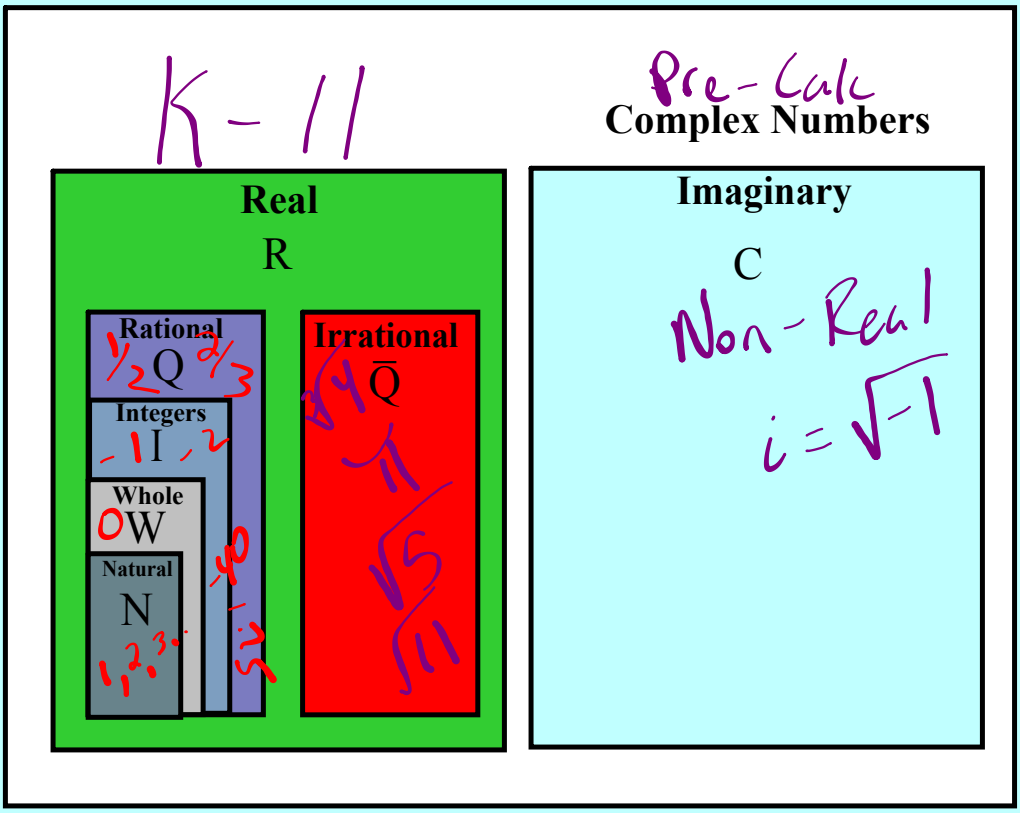
1) $y \leq -\frac{8}{3}x - 3$



2) $2x + 5y - 20 > 0$



STORYTIME: "The Complete Number System"



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.

Domain -> describes x values

Range -> describes y values

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

Real

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

N, W, I

If the solution set is **discrete**, only specific point in the solution region are in the solution set. This is represented graphically by stippling. (DOTS)

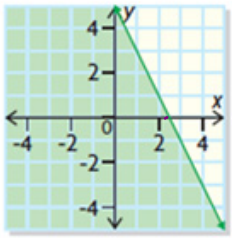
Some solution sets may be restricted to specific quadrants. For example, most linear inequalities representing real-world problem situations have graphs that are restricted to the first quadrant.

Here are some examples:

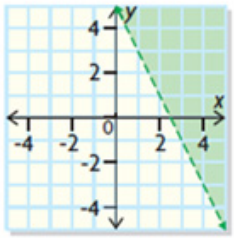
{ } -> wickets ∈ -> belongs to OR is a set of denotes a set of #'s

such that

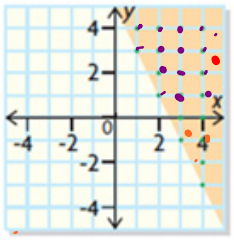
$\{(x, y) \mid y \leq -2x + 5, x \in R, y \in R\}$



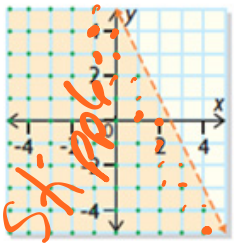
$\{(x, y) \mid y > -2x + 5, x \in R, y \in R\}$



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



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



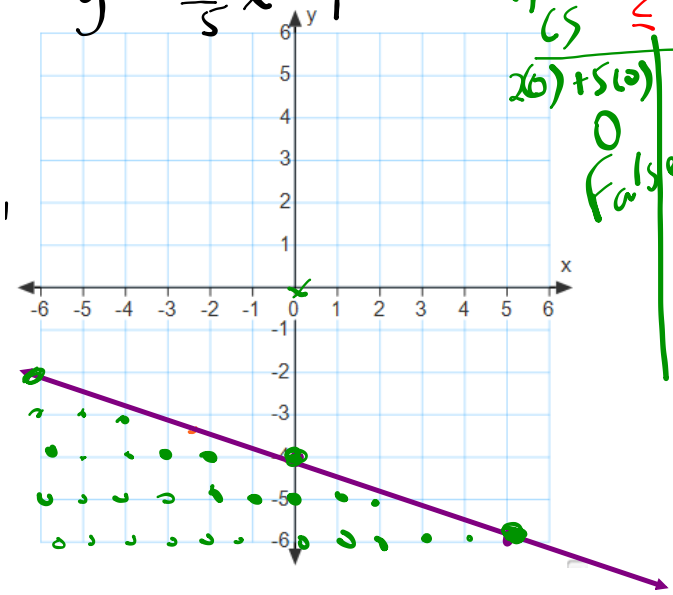
Stipple

Let's do a couple more...

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

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

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



Shade (dots)

Test (0,0)

CS ≤ RS

$2(0)+5(0) \mid -20$

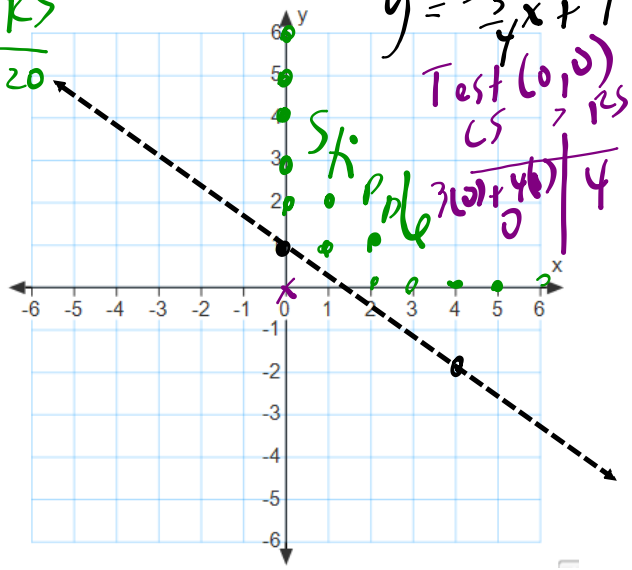
0 False

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

Test False $0 > 4$ Dots Quad #1

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

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



Shade

Test (0,0)

CS > RS

$3(0)+4(0) \mid 4$

0

HOMEWORK...

Worksheet - Graphing Inequations with 2 variables.pdf

Worksheet Solutions

Attachments

Worksheet - Graphing Inequations with 2 variables.pdf

Worksheet - Graphing Linear Inequalities.pdf