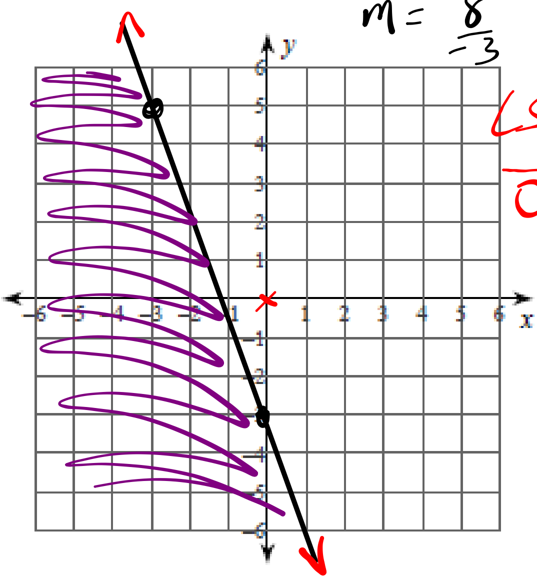
WARM-UP: Graph each of the following...

Test (0, 0)

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

$y = -\frac{8}{3}x - 3$

$m = \frac{8}{-3}$

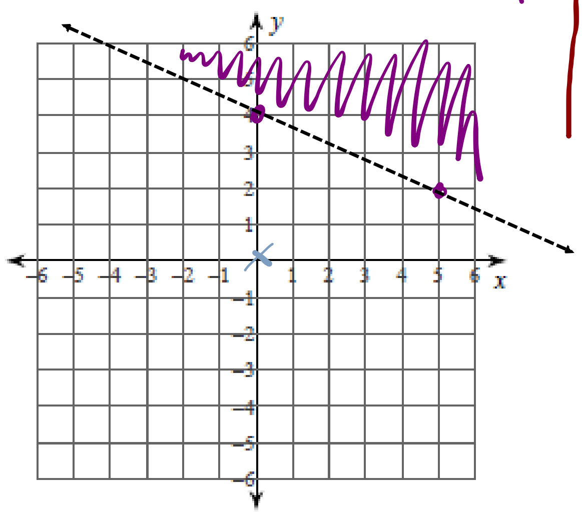


LS ≤ RS

0	$-\frac{8}{3}(0) - 3$
	≤ -3
	No

$2x + 5y - 20 > 0$

2)



LS	> RS
$\cancel{2(0)+5(0)-20}$	0
$-20 > 0$	
	NO

$2x + 5y - 20 = 0$

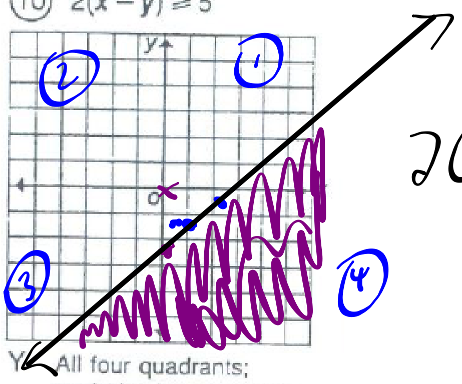
$\frac{\cancel{5}y}{\cancel{5}} = \frac{-2x}{5} + \frac{20}{5}$

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

Homework Questions

Test (0,0)

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



Y All four quadrants; excludes boundary line.

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

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

LS $\geq$	RS
$2(0-0)$	5
$0 \geq$	NO

$2(x-y)=5$

$2x-2y=5$

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

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

WARM-UP: Let's Review...
PRIOR KNOWLEDGE???

WORDS You Need to Communicate Effectively Warm Up - Prior Knowledge for Coordinate Geometry.docx

1. Match each term with the best example or description on the right.

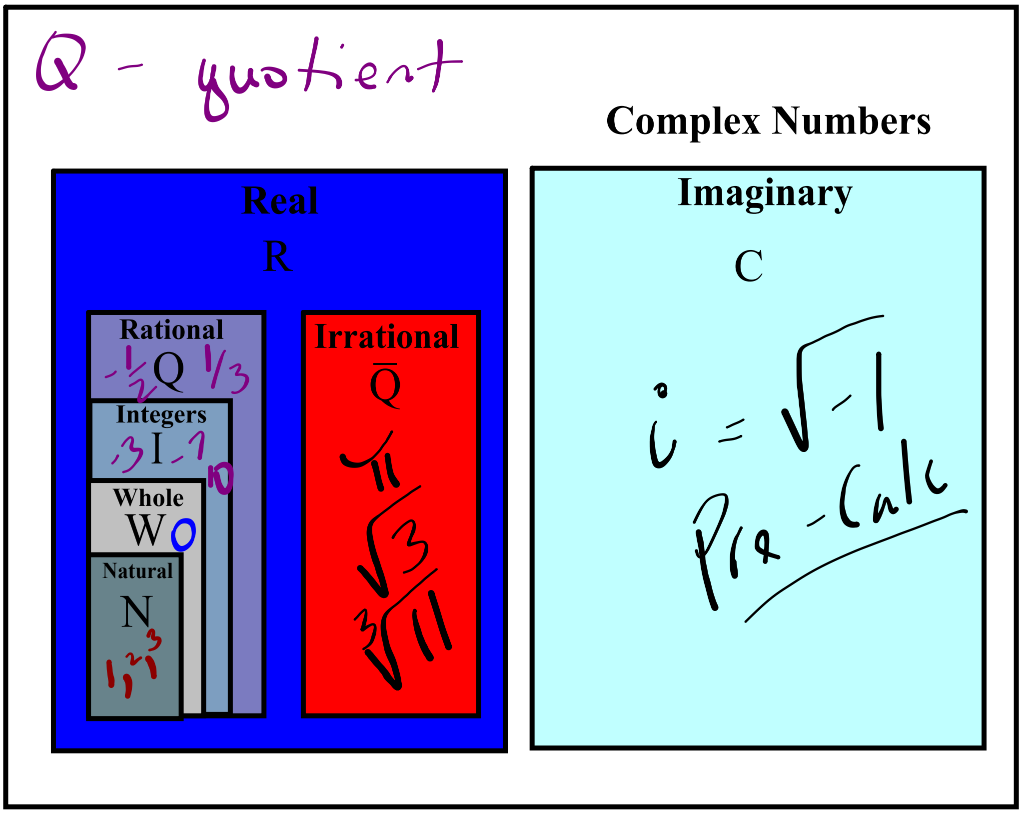
a) linear equation
b) x- and y-intercepts
c) slope
d) linear inequality
e) dependent variable
f) domain
g) range
h) discrete
i) continuous
j) independent variable
k) quadrant I

i) the value 3 in the equation $y = 3x + 1$
ii) $\{1, 2, 3\}$ in the solution set $\{(1, 5), (2, 6), (3, 7)\}$
iii) in a relationship, the variable graphed on the y-axis
iv) $2y = 3x + 7$
v) $3 \leq x + 5$
vi) term used to describe a solution set from the set of real numbers
vii) $\left(\frac{5}{4}, 0\right)$ and $(0, -5)$ for the graph of $y = 4x - 5$
viii) $\{5, 6, 7\}$ in the solution set $\{(1, 5), (2, 6), (3, 7)\}$
ix) in a relationship, the variable graphed on the x-axis
x) term used to describe a solution set from the set of integers
xi) the part of the coordinate plane where $x > 0$ and $y > 0$

Answers

1.

STORYTIME: "The Complete Number System"



5.1 Graphing Linear Inequalities in Two Variables

GOAL

Solve problems by modelling linear inequalities in two variables.

EXPLORE...

VERIFY

LS	RS

• For which inequalities is (3, 1) a possible solution? How do you know?

a) $13 - 3x > 4y$
b) $2y - 5 \leq x$
c) $y + x < 10$
d) $y \geq 9$

Test

Let's VERIFY...

a) LS > RS

LS	RS
$13-3(3)$	$4(1)$
$13-9$	4
4 >	No

b) LS ≤ RS

LS	RS
$2(1)-5$	3
-3 ≤	Yes

c) LS < RS

LS	RS
$1+3$	10
4 <	Yes

d) LS ≥ RS

LS	RS
1 ≱	9
	No

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.

\# set

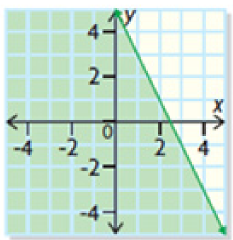
So when interpreting the solution region for a linear inequality, consider the restriction on the domain and range of the variables.

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

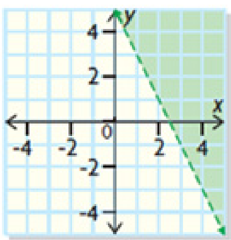
Some solution sets may be restricted to specific quadrants. For example, most linear inequalities representing real-world problem situations have graphs that are restricted to the first quadrant.

Here are some examples:

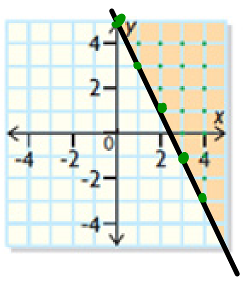
$\{(x, y) \mid y \le -2x + 5,\ x \in R,\ y \in R\}$



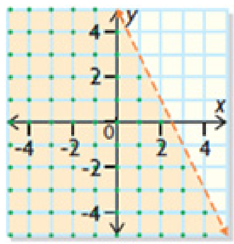
$\{(x, y) \mid y > -2x + 5,\ x \in R,\ y \in R\}$



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



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

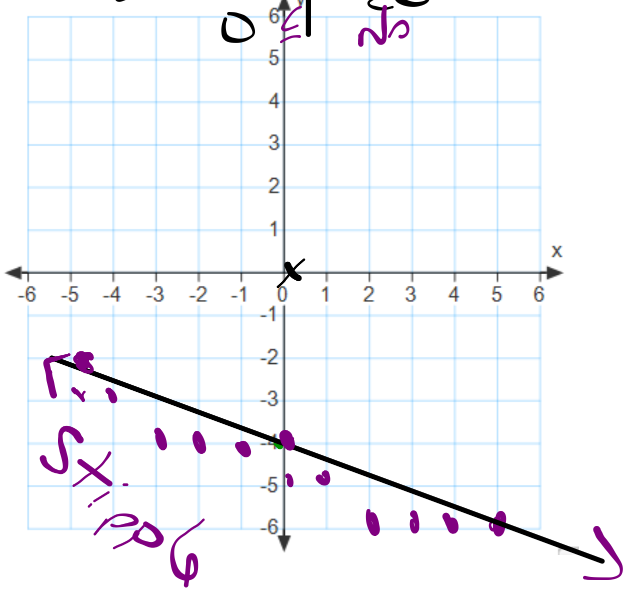


Let's do a couple more...

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

LS ≤ RS Stipple (dots)

LS	RS
$2(0)+5(0)$	-20
$0 \le$	No



{ } -> Set of #'s

| -> such that

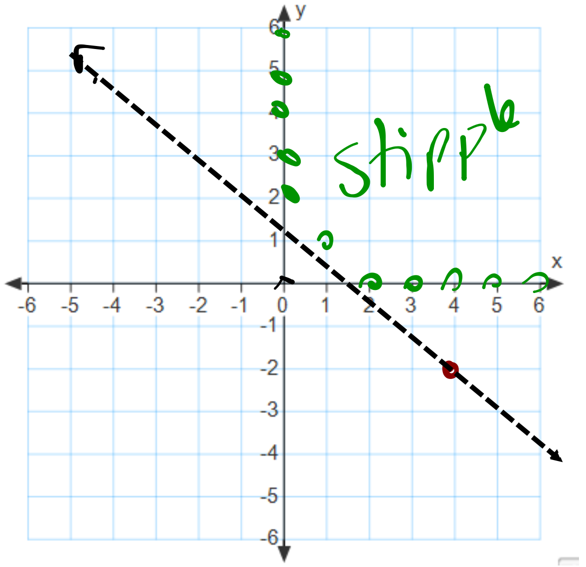
$\in$ -> belongs to

$$2x+5y=-20$$

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

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

2) $\{(x, y) \mid 3x + 4y > 4, \underbrace{x \varepsilon W, y \varepsilon W}_{\text{Stipple in Q1}}\}$



$3x + 4y = 4$

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

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

LS >	RS
$3(0) + 4(0)$	4
$0 >$	NO.

HOMEWORK...

p. 221: #1, #2, #4 and #6

Attachments

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