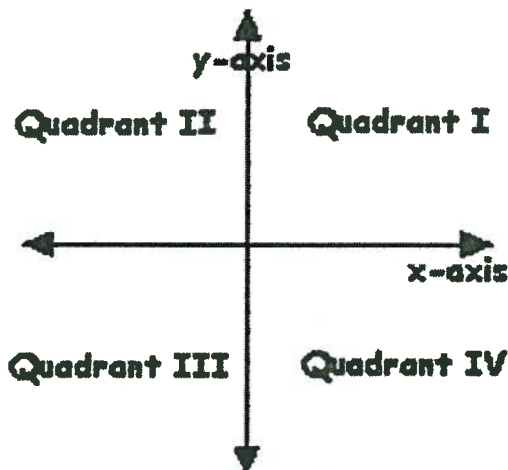


Name: Key

Lesson 6.7 - Set Notation

Definitions:

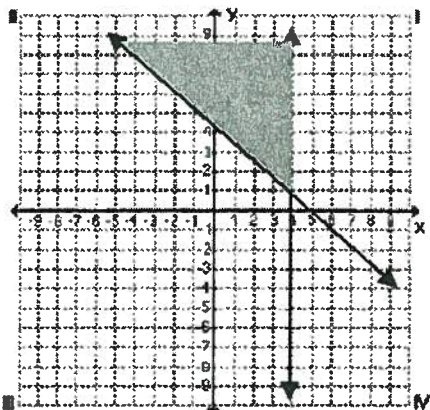
Quadrant



Domain: the set of all x-values (left → right)

Range: the set of all y-values (bottom → top)

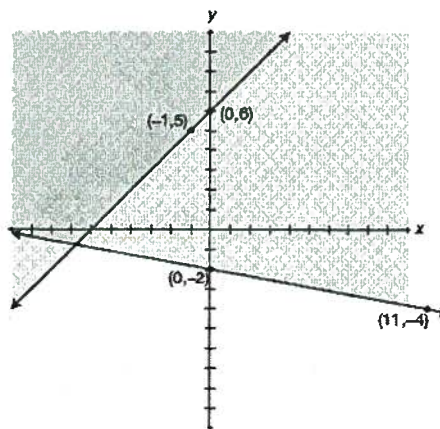
Example #1



D: $x \leq 4$

R: $y \geq 1$

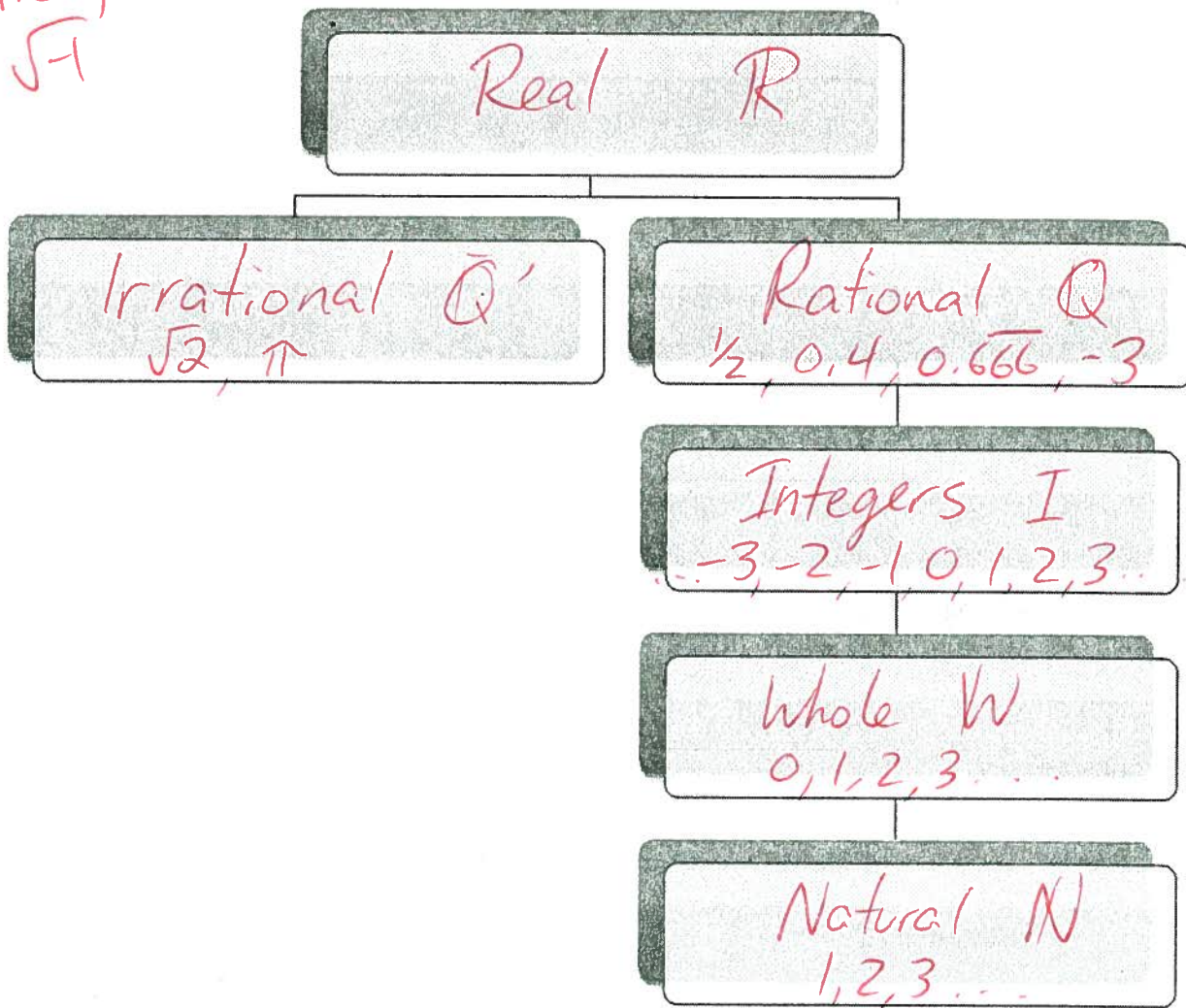
Example #2



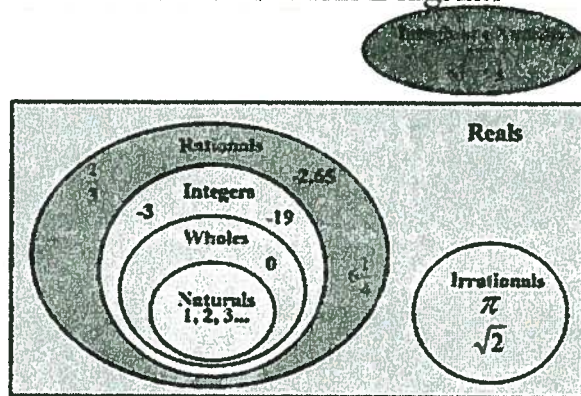
D: all reals

R: $y \geq -1$

imaginary
 $\sqrt{-1}$



Number Sets Venn Diagram

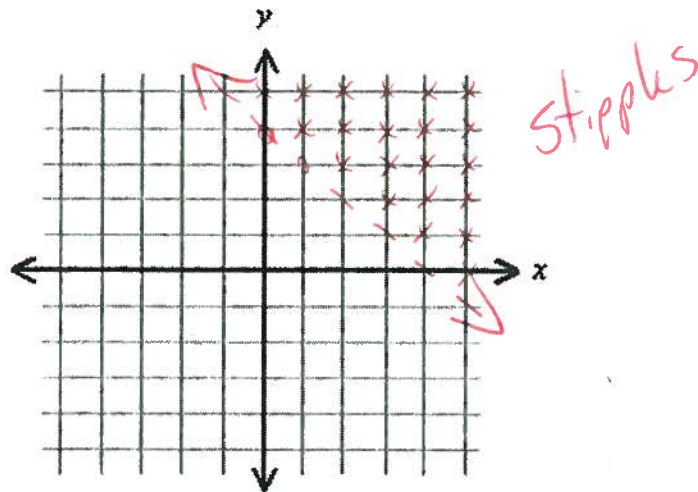
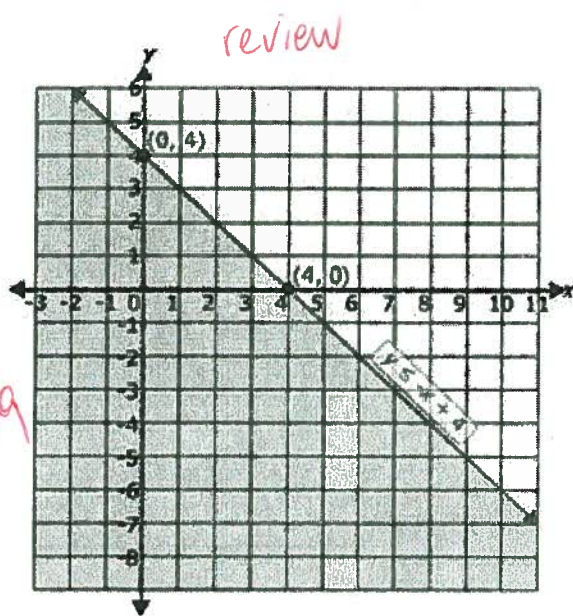


Continuous (Real)

$$y \leq -x + 4$$

Discrete (Integers + Whole)
(but x and y are integers)

$$y > -x + 4$$



Set Notation

- { = ~~the~~ "the set of"
- | = "such that"
- ∈ = "an element of"

Example:

$$\{(x, y) | y > -2x + 1, x \in R, y \in R\}$$

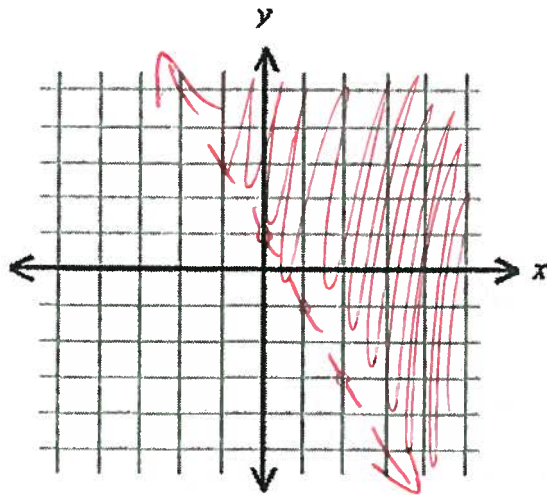
"The set of all (x, y) coordinates such that $y > -2x + 1$

x is an element of the real numbers and

y is an element of the real numbers."

Example #1: Graph the solution for $\{(x,y) | y > -2x + 1, x \in \mathbb{R}, y \in \mathbb{R}\}$ *ignore shading*

$$y > -2x + 1$$



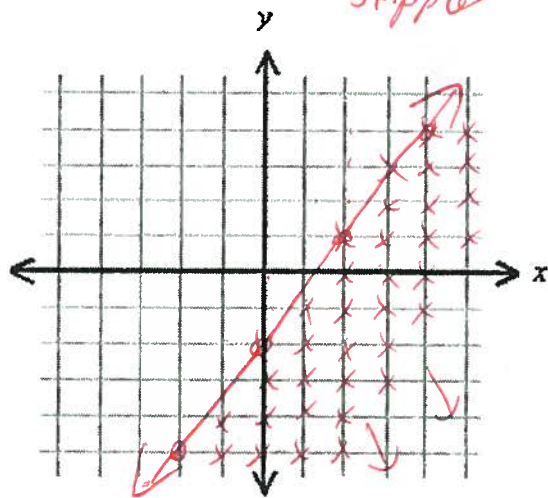
D: $x \in \mathbb{R}$ (all reals)
 R: $y \in \mathbb{R}$ (all reals)

Example #2: Graph the solution for $\{(x,y) | 2y + 4 \leq 3x, x \in \mathbb{I}, y \in \mathbb{I}\}$ *stipples*

$$2y + 4 \leq 3x$$

$$2y \leq 3x - 4$$

$$y \leq \frac{3}{2}x - 2$$



D: $x \in \mathbb{I}$
 R: $y \in \mathbb{I}$

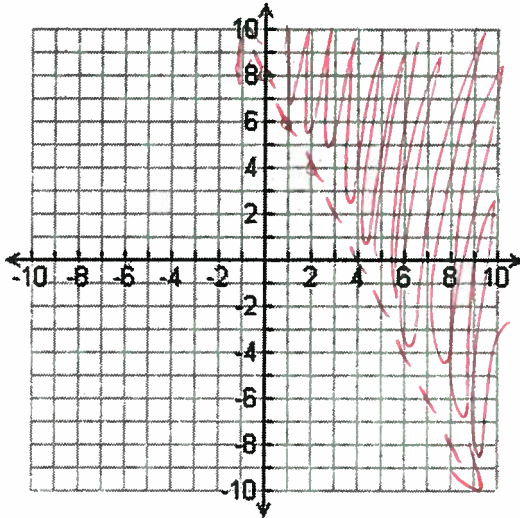
Name: _____

6.7 Assignment

Graph the solution set for each linear inequality

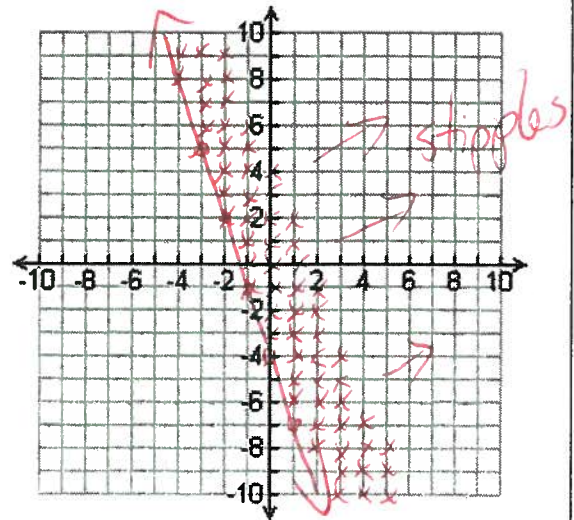
1) $\{(x, y) | y > -2x + 8, x \in R, y \in R\}$

shading



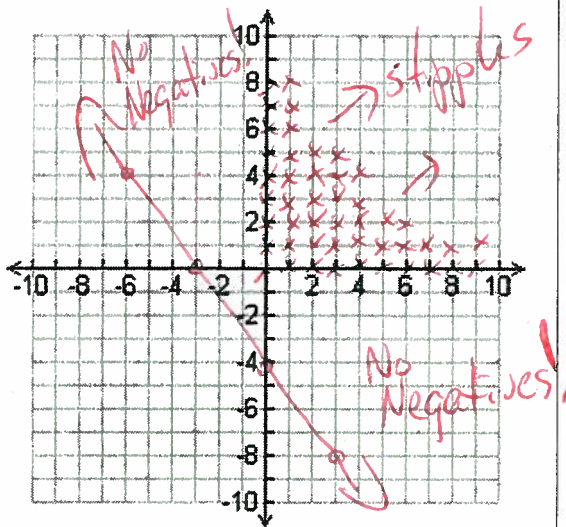
2) $\{(x, y) | -3y \leq 9x + 12, x \in I, y \in I\}$

$y \geq -3x - 4$



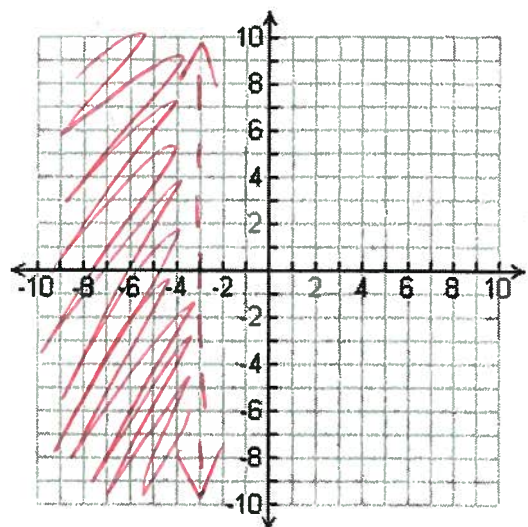
3) $\{(x, y) | 4x + 3y \geq -12, x \in W, y \in W\}$

$3y \geq -4x - 12$
 $y \geq -\frac{4}{3}x - 4$



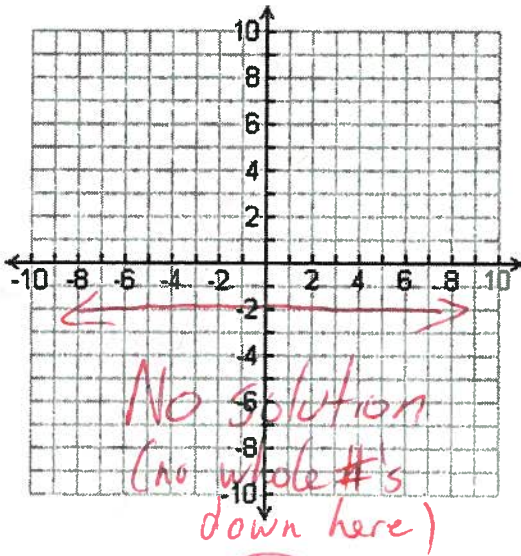
4) $\{(x, y) | -4x - 8 > 4, x \in R, y \in R\}$

$-4x > 12$
 $x < -3$



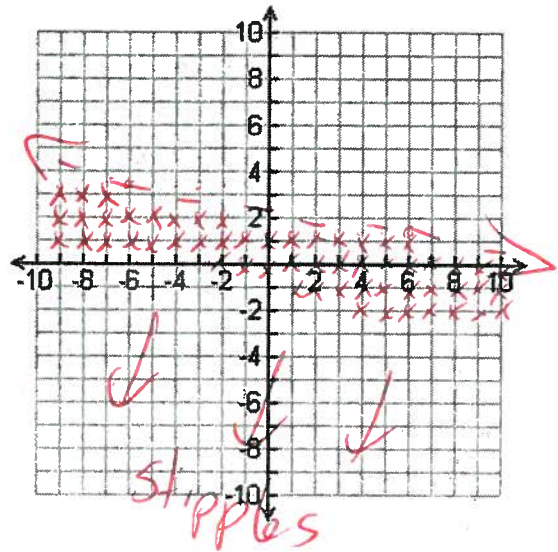
5) $\{(x, y) | 2x - y \geq 5y + 2x + 12, x \in W, y \in W\}$

$-5y - y \geq -2x + 2x + 12$
 $-6y \geq 12$
 $y \leq -2$



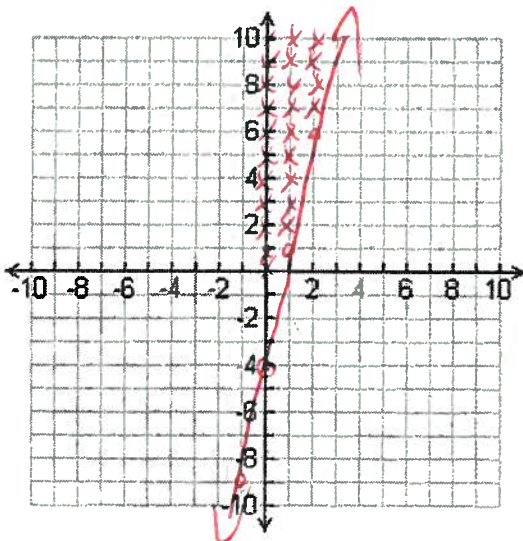
6) $\{(x, y) | x + 6y - 14 < 0, x \in I, y \in I\}$

$x + 6y < 14$
 $6y < -x + 14$
 $y < -\frac{1}{6}x + 2.3$



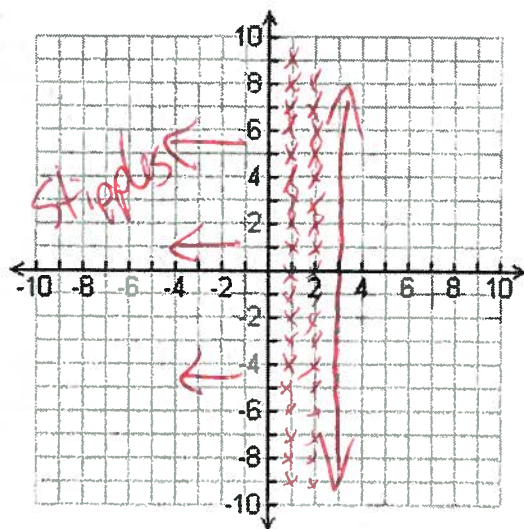
7) $\{(x, y) | 5x - y \leq 4, x \in W, y \in W\}$

$-y \leq -5x + 4$ NO NEGATIVES
 $y \geq 5x - 4$



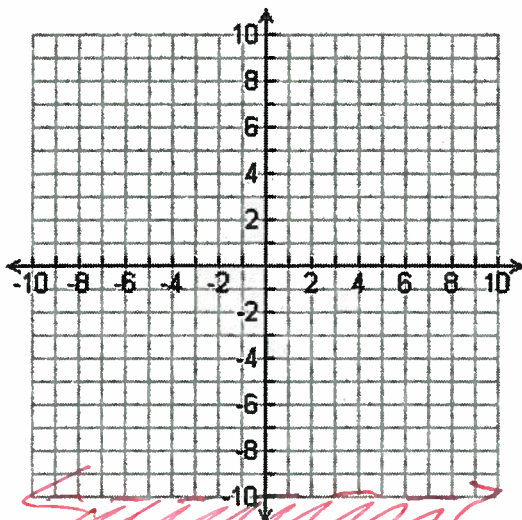
8) $\{(x, y) | 2x + 2 \leq 5 + x, x \in I, y \in I\}$

$x \leq 3$



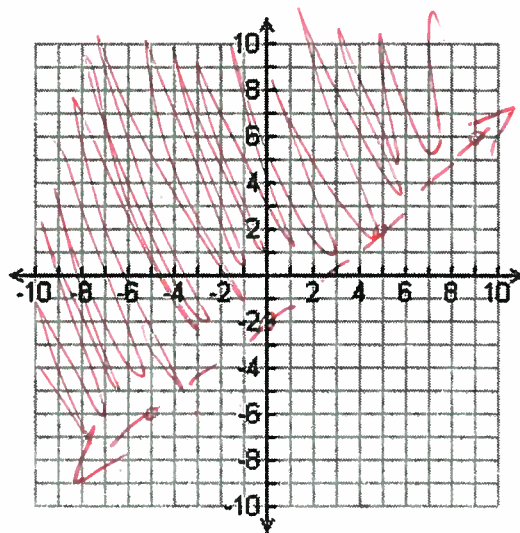
9) $\{(x, y) | -2y > 20, x \in R, y \in R\}$

$y < -10$



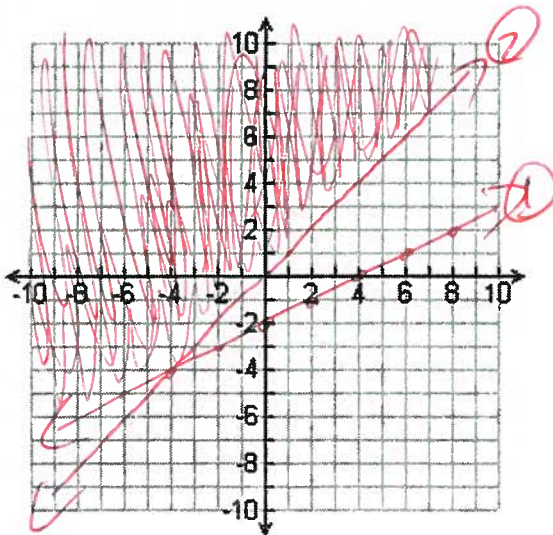
10) $\{(x, y) | 4x - 5y < 10, x \in R, y \in R\}$

$-5y < -4x + 10$
 $y > \frac{4}{5}x - 2$



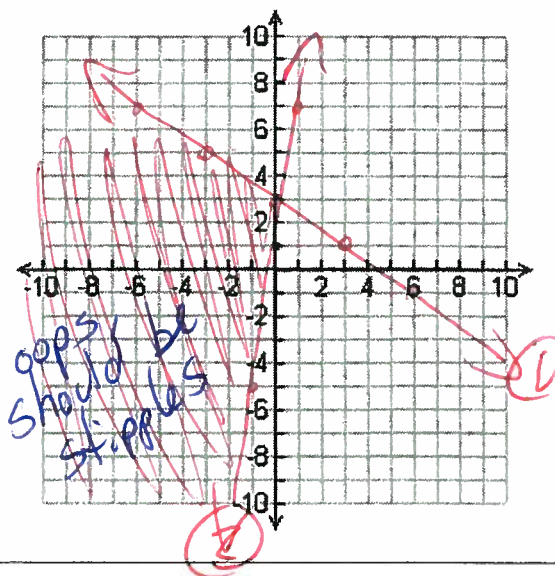
11) $\{(x, y) | -x + 2y \geq -4, x \in R, y \in R\}$
 $\{(x, y) | y \geq x, x \in R, y \in R\}$

① $2y \geq x - 4$
 $y \geq \frac{1}{2}x - 2$
 ② $y \geq x$



12) $\{(x, y) | 2x + 3y \leq 9, x \in I, y \in I\}$
 $\{(x, y) | y - 6x \geq 1, x \in I, y \in I\}$

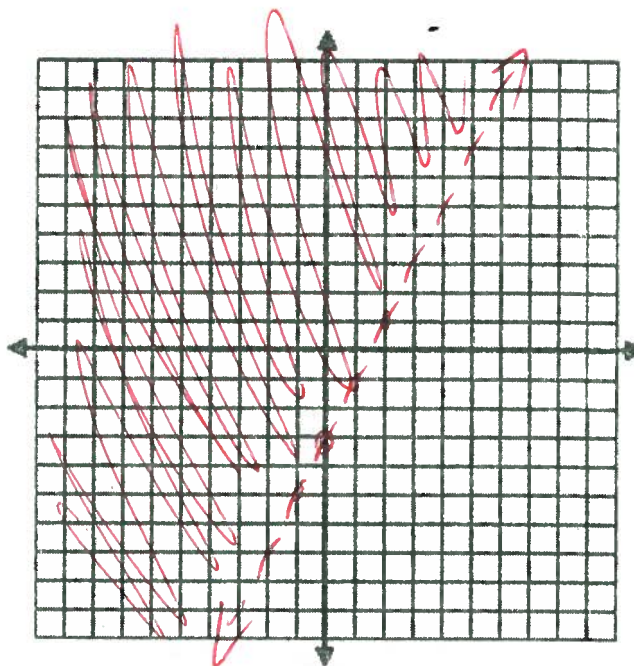
① $3y \leq -2x + 9$
 $y \leq -\frac{2}{3}x + 3$
 ② $y \geq 6x + 1$



Practice Quiz

1) $\{(x, y) | y + 3 > 2x, x \in R, y \in R\}$

$y > 2x - 3$



2) $\{(x, y) | y \leq -\frac{3}{2}x - 4, x \in I, y \in I\}$

