HOMEWORK... Questions?

2b, 6a, 6b, 6d

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

2b)

2. Consider the graph of this inequality.

$2x + 3y > 5$

Make each of the following decisions, and provide your reasoning.

a) whether the boundary should be dashed, stippled, or solid

b) whether the half plane above or below the boundary should be shaded

c) whether each point is in its solution region:

i) (1, 1) NO ii) (1, 0) NO iii) (1, 2) ~~NO~~

CS > RS

$2(0)+3(0) \mid 5$

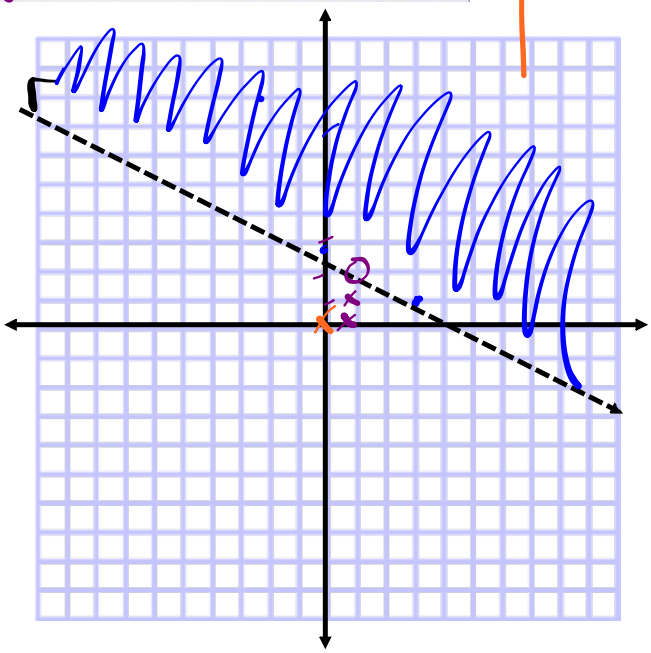
$0 > $ NO

$2x + 3y = 5$

$3y = -2x + 5$

$\frac{3y}{3} = \frac{-2x}{3} + \frac{5}{3}$

$y = -\frac{2}{3}x + 2.6$



c) iii

CS > RS

$2(1)+3(2) \mid 5$

8 ✓ yes

(1, 2)

6. Graph the solution set for each linear inequality.

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

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

c) $\{(x, y) \mid 5x - y \leq 4, x \in W, y \in W\}$

d) $\{(x, y) \mid 2x + 2 \leq 5 + x, x \in I, y \in I\}$

e) $\{(x, y) \mid -2y > 20, x \in R, y \in R\}$

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

Simple Q1

LS RS

$2(0) - 0 \quad 5(0) + 2(0) + 12$

$0 \geq 12$ NO

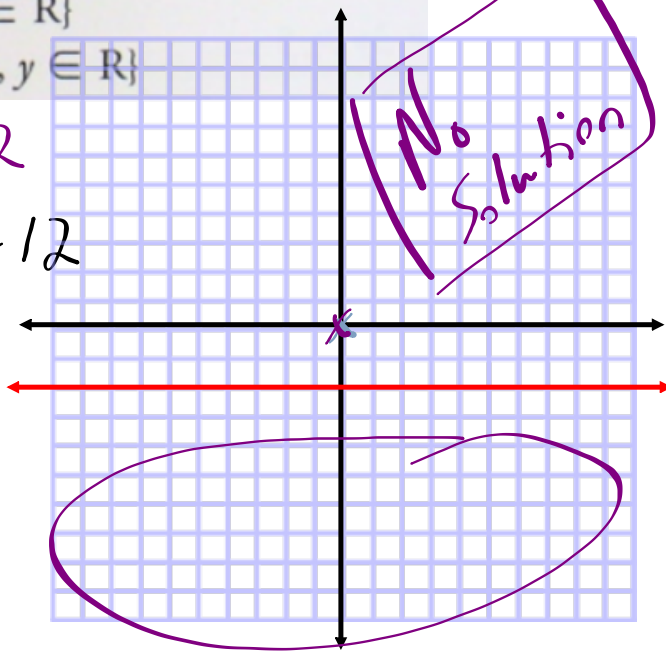
a) $2x - y = 5y + 2x + 12$

$-y - 5y = 2x - 2x + 12$

$-6y = 12$

$\frac{-6y}{-6} = \frac{12}{-6}$

$y = -2$



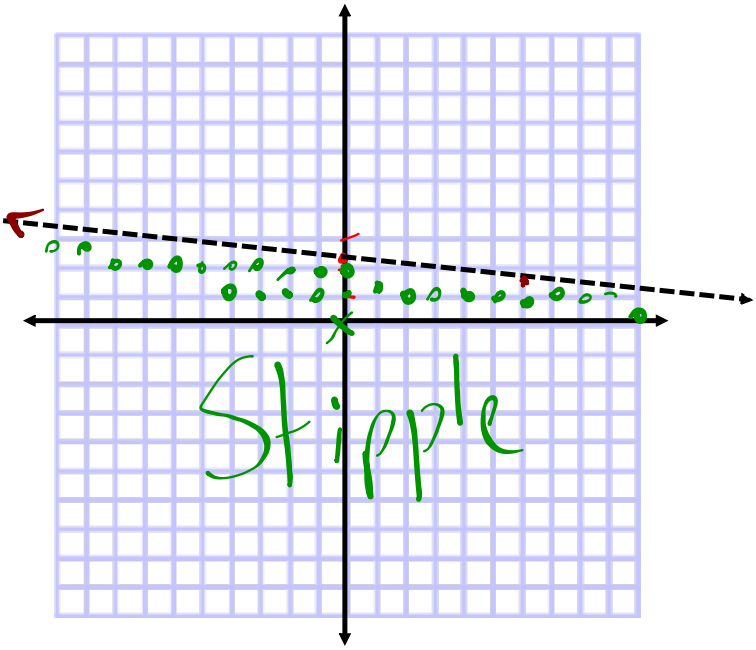
6b) $x + 6y - 14 < 0$, $x \in I$ $y \in I$

LS	<	RS
-14		0

yes

$6y = -x + 14$

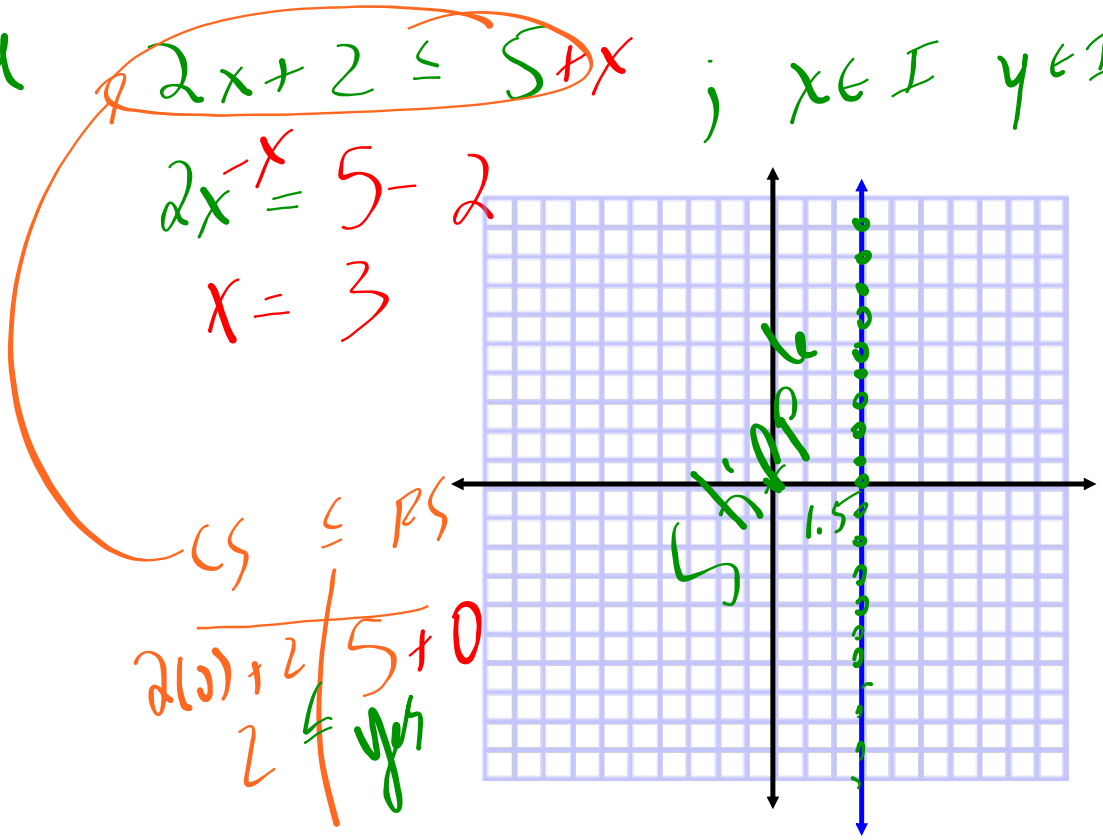
$y = -\frac{1}{6}x + 2.3$



6d $2x+2 \leq 5+x$; $x \in I$ $y \in I$

$2x - x \leq 5 - 2$

$x \leq 3$



CS $\leq$ PS

$2(3)+2 \mid 5+0$

$8 \leq 5$

Line Segment vs Line vs Ray

Applications...Apply your skills to a context

EXAMPLE #2: HANDOUT - Application of a Linear Inequality.docx

M > L

Malia and Lainey are competing in a spelling quiz. Malia gets a point for every word she spells correctly. Lainey is younger than Malia, so she gets 3 points for every word she spells correctly plus one bonus point. What combination of correctly spelled words for Malia and Lainey result in Malia ~~spelling~~ scoring more? Choose two combinations that make sense and explain why.

Step 1: Declare variables

x - # of words Malia spells correct
y - # of words Lainey spells correct

Step 2: State restrictions

x ∈ W
y ∈ W

Set?

Step 3: Develop the inequation

$x > 3y + 1$

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

Step 4: Graph the solution set (MUST include labels/scales)

$x = 3y + 1$

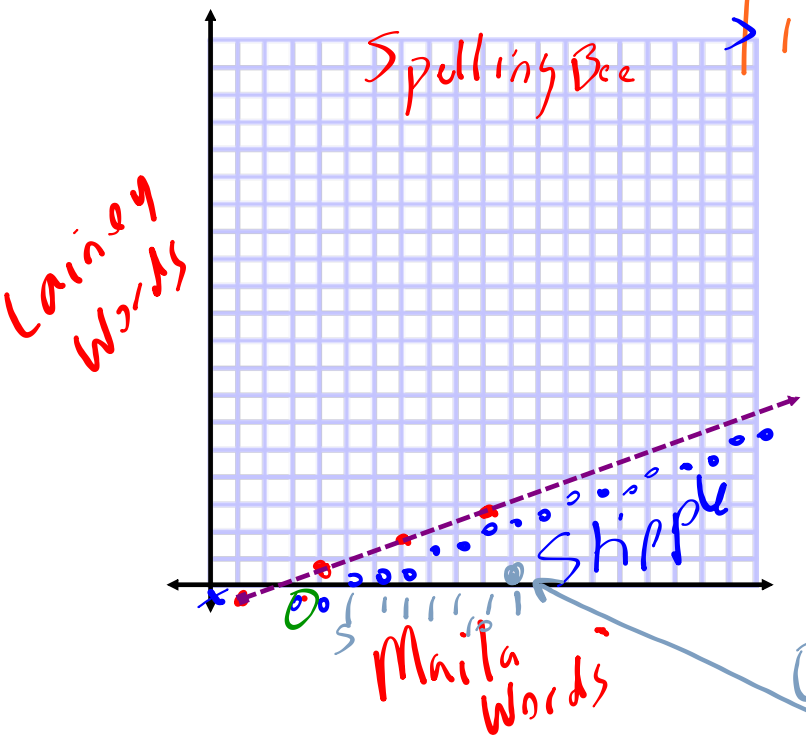
LS > RS

0	3(0)+1
	1

NO

$\frac{1}{3}(1) - \frac{1}{3}$
$\frac{1}{3}(4) - \frac{1}{3}$
$\frac{1}{3}(7) - \frac{1}{3}$

x	y
0	-0.3
1	0
4	1
7	2
10	3



Answers

① (11, 1) Malia - 11, Lainey - 1

② (3, 0) M - 3, L - 0

HOMEWORK...

Worksheet - Applications of a Linear Inequality.pdf

p. 221: ~~#5~~, 7, 8

p. 235 #4

1) Declare variables
2) State restrictions
3) Develop inequation
4) Graph solution set

Attachments

Example - Application of a Linear Inequality.docx

Worksheet - Applications of a Linear Inequality.pdf