9/7/2012 - Sec 3.4 Math 1010

70

Through $\underset{x_1, y_1}{(-1,3)}$, parallel ↓ same slope

$-x + 3y = 12$

$+x$ ↓ $+x$

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

$y = \frac{1}{3}x + 4$ ← Not useful

My slope = $\frac{1}{3}$

$y - y_1 = m(x - x_1)$

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

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

$+3 \qquad +3$

a) $y = \frac{1}{3}x + \frac{10}{3}$

b → standard form

40, 80

#80 y Represents total paid

$125 each

x # of tickets

x	y
0	0 = 125(0)
5	625 = 125(5)
10	1250 = 125(10)

Eq: $y = 125x$

(0,0)

(5, 625)

(10, 1250)

#46

through $(\overset{x_1}{7}, \overset{y_1}{-2})$; slope $= \overset{m}{\frac{1}{4}}$

$y - y_1 = m(x - x_1)$

$y - -2 = \frac{1}{4}(x - 7)$

$y + 2 = \frac{1}{4}x - \frac{7}{4}$

a) standard form

$4 \cdot y = \overset{4 \cdot 1}{\cancel{4}} x - \frac{4 \cdot 15}{4}$

$4y = x - 15$

$-x \quad -x$

$-1(-x + 4y = -15)$

$\boxed{x - 4y = 15}$

b) slope-int form

$y + 2 = \frac{1}{4}x - \frac{7}{4}$

$-2 \qquad -\frac{8}{4}$

$\boxed{y = \frac{1}{4}x - \frac{15}{4}}$ ✓

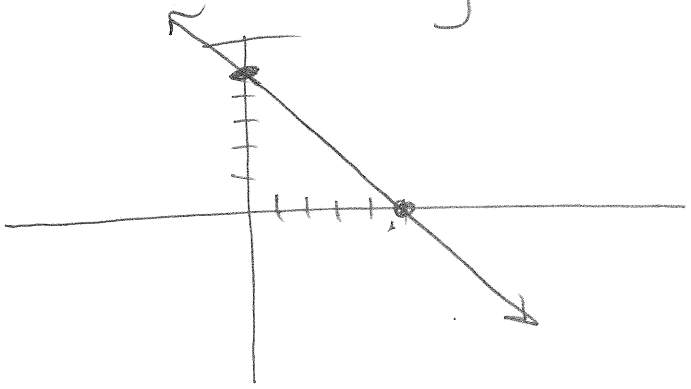
Sec 3.4 Linear Inequalities in 2 Variables

A Linear Inequality in 2 Variables is an equality that can be written as

$Ax + By < C$ or $Ax + By \leq C$

$Ax + By > C$ or $Ax + By \geq C$

Look at $x+y=5$



3 groups
- above the line
- below the line
- on the line ← =

How to Graph a Linear Inequality

Step 1: Draw Graph of the Line that is the boundary
- use — solid line for $\geq$ or $\leq$
- --- dashed line for $>$ or $<$

Step 2: Choose a point **not** on the line

Step 3: test the point in the inequality
- statement true = shade side w/ point
- statement false = shade side w/o point

$3x+2y \geq 6$
^ solid Line!

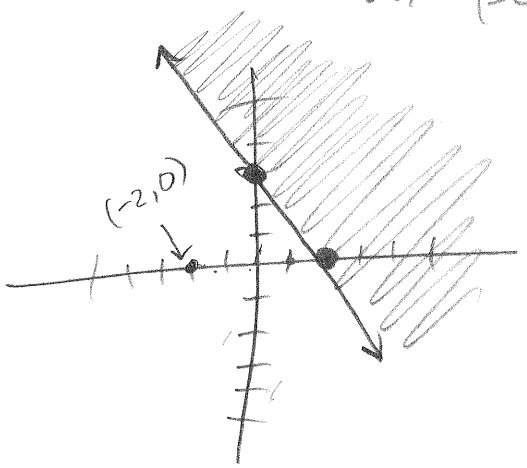
$$\frac{2y}{2} \geq \frac{-3x}{2} + \frac{6}{2}$$

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

$$0 \geq -\frac{3}{2}(-2) + 3$$

$$0 \geq 3 + 3$$

$0 \geq 6$ false



Recall "and" - intersection
- where both are true

"or" - union
- where either is true

#26 $3x - y \geq 3$ and $y < 3$

$-3x \quad -3x$

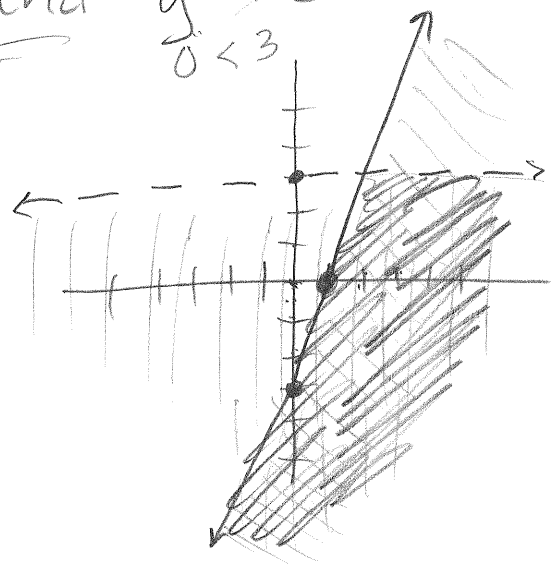
$-y \geq -3x + 3$

$-1 \quad -1 \quad -1$

$y \leq 3x - 3$

$0 < 0 - 3$

$0 < -3$ false



#34 $x + y \leq 2$ or $y \geq 3$

$-x \quad -x$

$y \leq -x + 2$

$0 \leq -0 + 2$

$0 \leq 2$ true