

Homework Review - Section 7.5, practice WS

(18)

$$5x - 5y = -3$$

$$y = x + \boxed{0.6}$$

inf. solutions

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

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

$$y = x + .6$$

(33)

$$\begin{array}{r} 7x - 8y = -9 \\ -7x \quad -7x \end{array}$$

$$\begin{array}{r} -8y = -7x + 9 \\ \hline \frac{-8y}{-8} = \frac{-7x}{-8} + \frac{9}{-8} \end{array}$$

$$y = \frac{7}{8}x + \frac{9}{8}$$

$$y = \frac{7}{8}x$$

$$\textcircled{15} \begin{array}{l} (2x + 5y = 14) \quad 3 \\ 6x + 7y = 10 \\ -6x + 15y = -42 \\ \hline \end{array}$$

$$\begin{array}{r} -8y = -32 \\ \hline -8 \quad -8 \end{array}$$

$$y = 4$$

$$(-3, 4)$$

$$2x + 5(4) = 14$$

$$\begin{array}{r} 2x + 20 = 14 \\ -20 \quad -20 \end{array}$$

$$\frac{2x}{2} = \frac{-6}{2}$$

$$x = -3$$

① 3 nights + 2 pairs of tickets = \$557
 5 night + 4 pairs of tickets = \$974

x — night
 y — one pair

② $3x + 2y = 557$
 $5x + 4y = 974$

$$\frac{2y = -3x + 557}{2} \quad \frac{2y = -3x + 557}{2}$$

$$y = (-1.5x + 278.5)$$

$$5x + 4(-1.5x + 278.5) = 974$$

$$5x + -6x + 1114 = 974$$

$$-x = -140$$

$$x = 140$$

$$\begin{array}{r} 1114 \\ 974 \\ \hline -140 \end{array}$$

$$3(140) + 2y = 557$$

$$420 + 2y = 557$$

$$\frac{2y = 137}{2} \quad \frac{2y = 137}{2}$$

$$y = 68.5$$

\$140/night (hotel)

\$68.50/pair ticket

$$\begin{array}{l} 2x + 3y = 4 \\ x - y = 6 \end{array}$$

(20)

information:

3.8 mph upstream (speed of barge)

8 mph downstream (speed of barge)

 x : Speed of barge in still water y : speed of current

$$x - y = 3.8$$

$$x + y = 8$$

5.9 mph:

barge (still water)

2.1 mph:

current

$$2x = 11.8$$

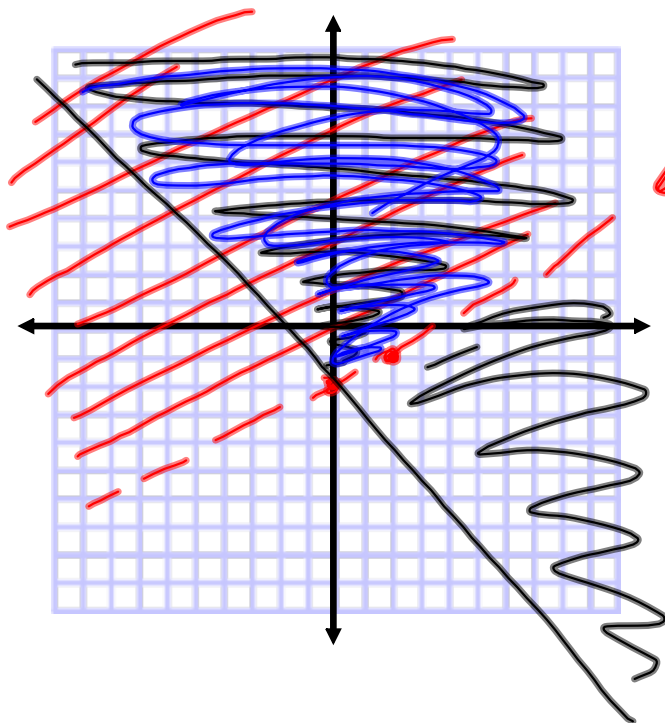
$$\frac{2x}{2} = \frac{11.8}{2}$$

$$x = 5.9$$

$$5.9 + y = 8$$

$$y = 2.1$$

Solving systems of linear inequalities:



$$\begin{aligned} -4y &< -2x + 8 \\ y &> \frac{1}{2}x - 2 \end{aligned}$$

What is a linear inequality?

$$2x - 4y < 8$$

What does the graph look like?

What is a system of linear inequalities?

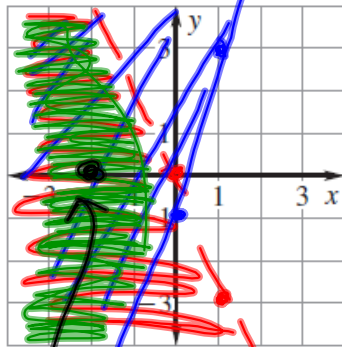
two or more linear inequalities

What does the graph look like?

Graphing Systems of Linear Inequalities

$$3x + y < 0$$

$$4x - y \leq 1$$



$$y < -3x$$

$$\frac{-y}{-1} \leq \frac{-4x + 1}{-1} \frac{1}{-1}$$

$$y \geq 4x - 1$$

Graph each linear inequality

Find the intersection of the shaded regions
- the "double shaded" region is the solution to the system

Check your work...

$$3(-2) + 0 < 0$$

$$\checkmark -6 < 0$$

$$4(-2) - 0 \leq 1$$

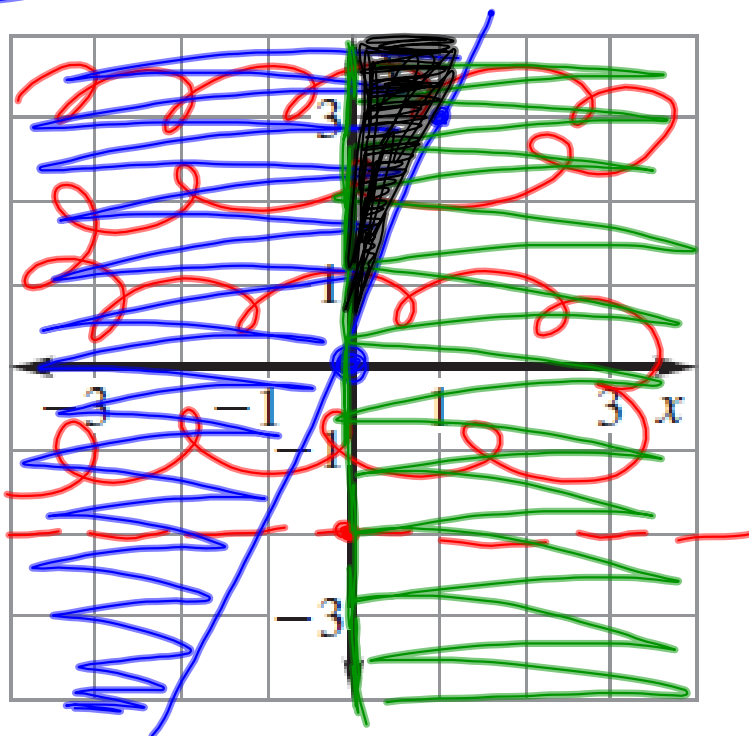
$$\checkmark -8 \leq 1$$

Systems with Three Inequalities:

$$y > -2, x \geq 0$$

$$y \geq 3x$$

$$y = mx + b$$



$$y = -2$$

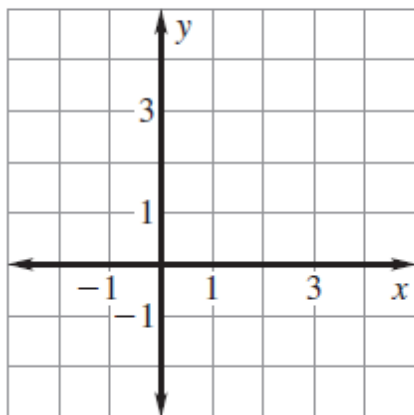
$$y = 0x + -2$$

$$y = 3x + 0$$

$$x = 0$$

$$x \geq 0, y \geq 0$$

$$2x + y < 3$$



Write a system of linear inequalities

Exercise You work out at least 10 hours a week, but no more than 15 hours a week. You divide your exercise time between swimming and running. This week, you want to spend at least twice the amount of time on swimming as on running. Write and graph a system of linear inequalities that gives the amounts of time you spend on each different kind of exercise. Then give two possible ways you can exercise.

$x = \text{workout time}$

$$x \geq 10$$

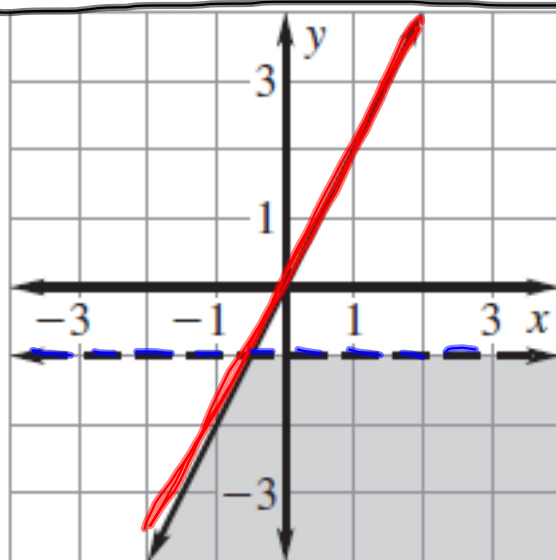
$$x \leq 15$$

From text, write the inequalities

s — swimming
 r — running

$$10 \leq s + r \leq 15$$

$$s \geq 2r$$

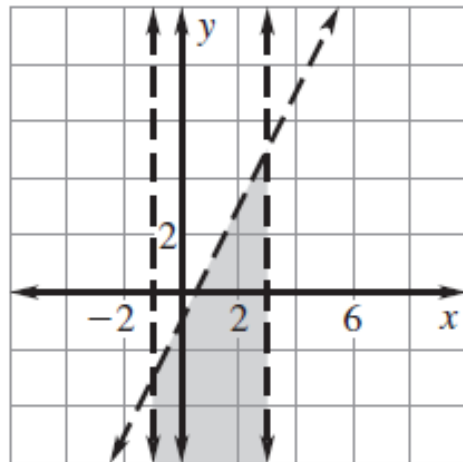


From a graph, identify the inequalities by using slope-intercept form

$$y \leq \frac{2}{1}x + 0$$

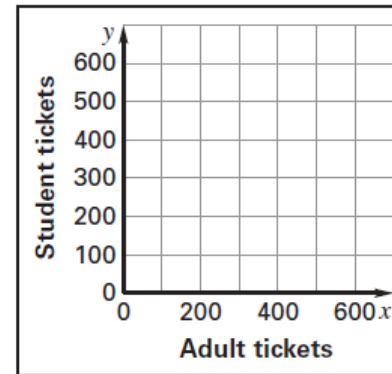
$$y \leq 2x$$

$$y < -1$$



School Play The tickets for a school play cost \$8 for adults and \$5 for students. The auditorium in which the play is being held can hold at most 525 people. The organizers of the school play must make at least \$3000 to cover the costs of the set construction, costumes, and programs.

- Write a system of linear inequalities for the number of each type of ticket sold.
- Graph the system of inequalities.
- If the organizers sell out and sell twice as many student tickets as adult tickets, can they reach their goal? *Explain* how you got your answer.



Homework:

p. 469; 3-8, 9-18 by 3, 25-29 odd, 31, 37, 39