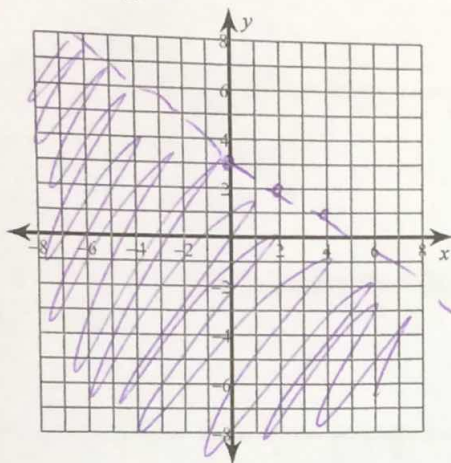


## 4.4 Worksheet

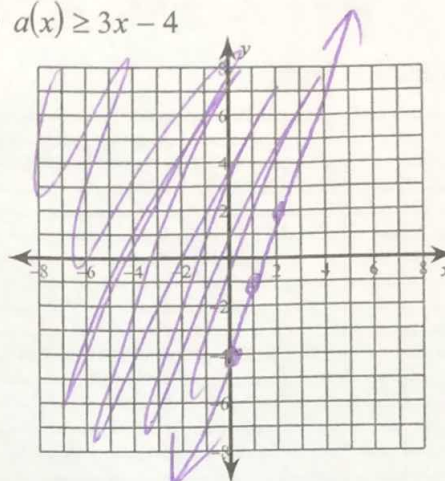
Date \_\_\_\_\_ Algebra \_\_\_\_\_

Graph each of the following functions:

1)  $g(x) < -\frac{1}{2}x + 3$



2)  $a(x) \geq 3x - 4$



3) Use your graph from #1 to answer the following:

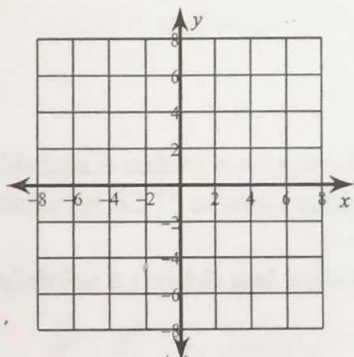
a. Is the origin part of the solution? yesb. Are the points on the line part of the solution? NO

4) Use your graph from #2 to answer the following:

a. Is the origin part of the solution? yesb. Are the points on the line part of the solution? yes

For these problems you can sketch a graph to help you, use your calculator, or plug in the values algebraically.

5)

Consider  $f(x) < 5x - 1$ .What is true when  $x = 3$ ?

$$f(3) < 5(3) - 1$$

$$f(3) < 14$$

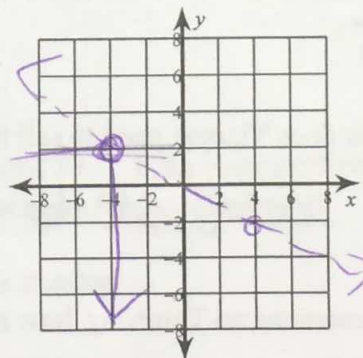
What is true when  $f(x) = 0$ ?

$$0 < 5x - 1$$

$$+1$$

$$\frac{1}{5} < x$$

6)

Consider  $h(x) < -\frac{1}{2}x$ .What is true when  $x = -4$ ?

$$x < 2$$

What is true when  $f(x) = 2$ ?

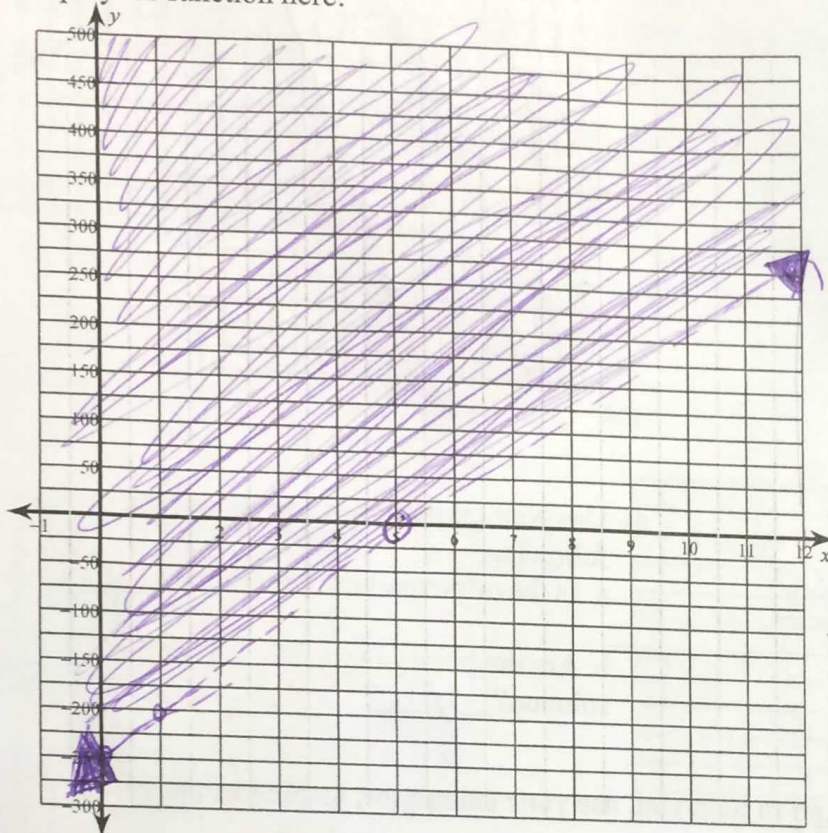
$$x < -4$$

- 7) Vincent Vacuums sells each vacuum for \$100. The vacuum costs Vincent's \$50 to make and there is \$250 of overhead costs each day.

Write a function  $p(v)$  that represents the profit of the company if  $v$  = number of vacuums sold.

$$p(v) = 50v - 250$$

Graph your function here:



- 8) How many vacuums does Vincent need to sell to break even on the day?

5

How many vacuums does Vincent need to sell to make a profit?

at least 6

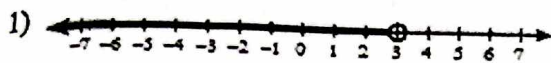
If Vincent sells 12 vacuums on Thursday, how much will the profit be?

$$50(12) - 250 = \boxed{350}$$

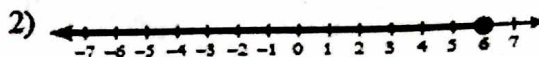
If Vincent makes \$1,150 of profit in a WEEK (7 days), what was the total number of vacuums he sold over the week?

$$\frac{1150}{50} = 23$$

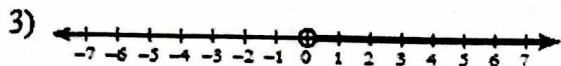
Write an inequality for each graph.



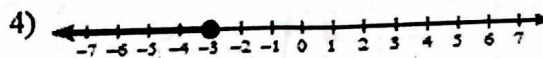
$$x < 3$$



$$x \leq 6$$

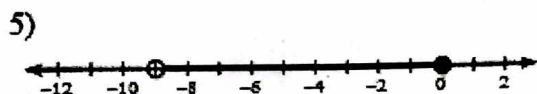


$$x > 0$$

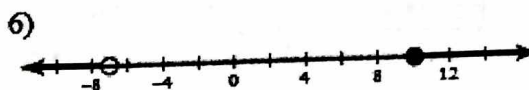


$$x \leq -3$$

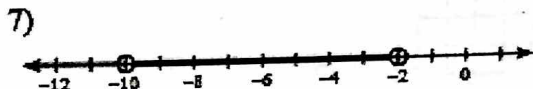
Write a compound inequality that fits the graph shown. AND inequalities should be written as joined inequalities.



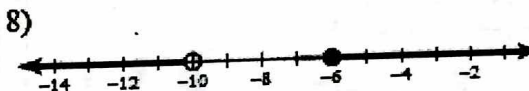
$$-9 < x \leq 0$$



$$x > -7 \text{ or } x \geq 10$$



$$-10 < x < -2$$



$$x < -10 \text{ or } x \geq -6$$

- 13) Melissa is making a scrapbook for her family but can only spend \$30. If the book itself cost \$14 and it costs her \$2.75 to make each page, how many pages can she make for the scrapbook?

a) define a variable and write an inequality that represents this situation.

$$x = \# \text{ of pages}$$

b) solve your inequality.

$$30 \geq 14 + 2.75x$$

$$-14 \quad -14$$

$$16 \geq 2.75x$$

$$5.82 \geq x$$

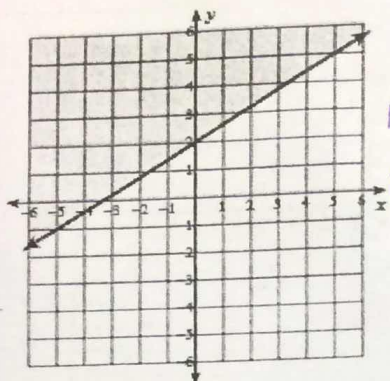
c) answer the question in a full sentence, be sure to use one of the inequality phrases we discussed in class.

She can make at most 5 pages



Write an inequality for the graph given AND state if the point (0,0) is in the solution or not.

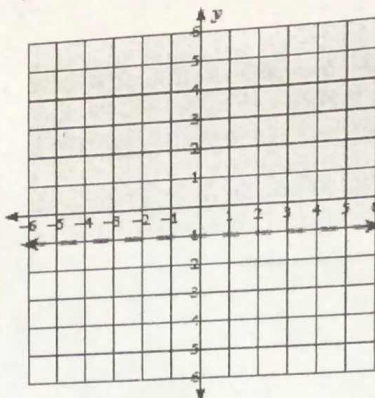
9)



NO

$$y > \frac{2}{3}x + 2$$

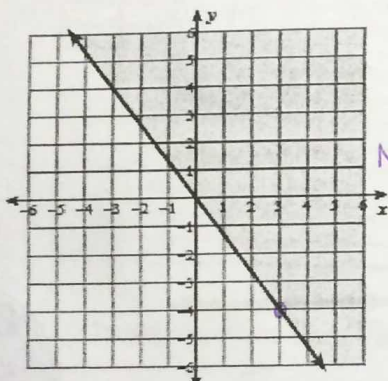
10)



yes

$$y > -1$$

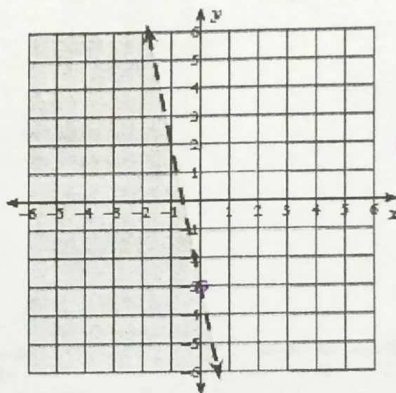
11)



NO

$$y < -\frac{4}{3}x$$

12)



yes

$$y < -5x - 3$$

Solve the following one variable inequalities.

$$7) 3(6n+5) - 6 < -2 + 7n$$

$$18n + 15 - 6 < -2 + 7n$$

$$18n - 1 < -2 + 7n$$

$$-7n + 1 < -2 + 7n$$

$$11n < -1$$

$$\frac{11n}{11} < \frac{-1}{11}$$

$$n < -\frac{1}{11}$$

$$9) \frac{x}{8} + 9 \leq 9$$

$$-9 - 9$$

$$9 \frac{x}{8} \leq 0 - 9$$

$$x \leq 0$$

$$8) \frac{1+5k}{2} \leq 3 \cdot 2$$

$$1+5k \leq 6$$

$$-1 \quad -1$$

$$\frac{5k}{5} \leq \frac{5}{5}$$

$$k \leq 1$$

$$10) 18 + 6n \geq 6(n+3)$$

$$18 + 6n \geq 6n + 18$$

$$0 \geq 0$$

all solutions