

1. Use the graph below to answer the following questions :

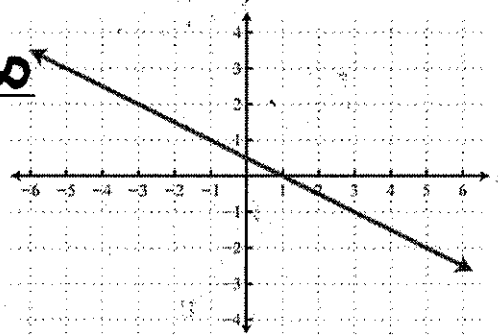
a. End Behavior:

as  $x \rightarrow +\infty, f(x) \rightarrow -\infty$  as  $x \rightarrow -\infty, f(x) \rightarrow +\infty$

b. Increasing: N/A Decreasing:  $(-\infty, +\infty)$

c. Domain:  $(-\infty, +\infty)$  Range:  $(-\infty, +\infty)$

d. Equation of the line:  $y = -\frac{1}{2}x + \frac{1}{2}$



2. Use the graph below to answer the following questions :

a. End Behavior:

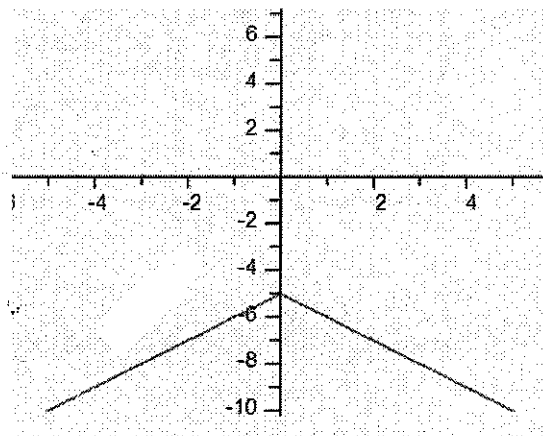
as  $x \rightarrow +\infty, f(x) \rightarrow -\infty$  as  $x \rightarrow -\infty, f(x) \rightarrow -\infty$

b. Increasing:  $(-\infty, 0)$  Decreasing:  $(0, +\infty)$

c. Domain:  $(-\infty, +\infty)$  Range:  $(-\infty, -5]$

d. Max or Min? Give the ordered pair: @  $y = -5$

e. Equation of absolute value:  $y = -\frac{3}{4}|x| - 5$



HINT: rate of change is  $\frac{3}{4}$

3. Solve the linear equation:  $3x + 10 = 5x - 12$

$$x = 11$$

4. Solve the absolute value equations.

$$|2x + 6| = 20$$

$$x = 7 \quad x = -13$$

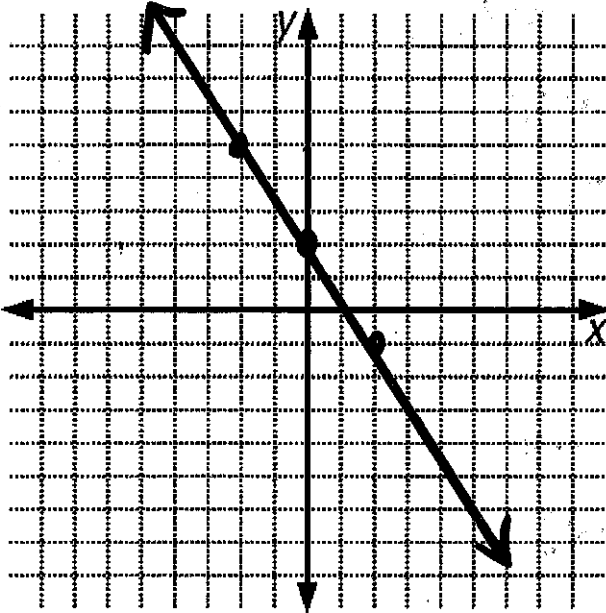
$$3|x - 7| + 5 = 50$$

$$x = 22 \quad x = -8$$

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

What is the y-intercept?  $(0, 2)$

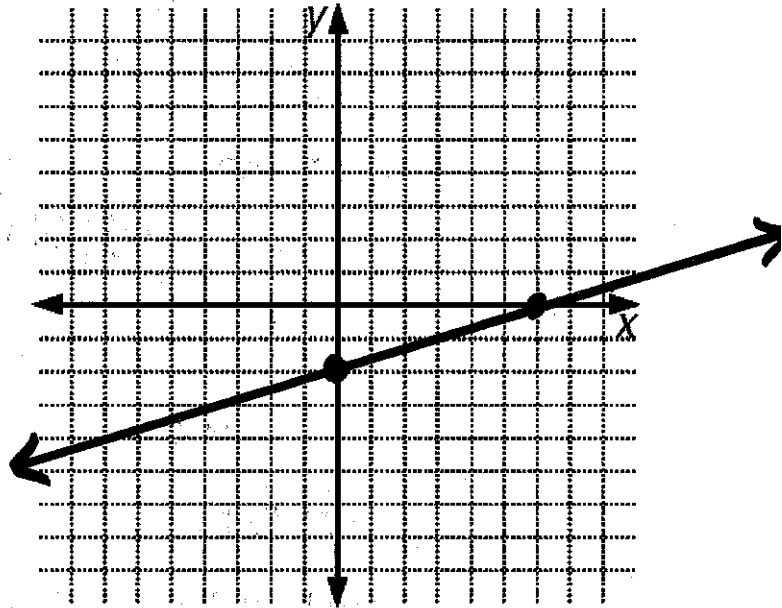
What is the slope?  $-\frac{3}{2}$



6. Graph  $4x - 12y = 24$

What is the x-intercept?  $(6, 0)$

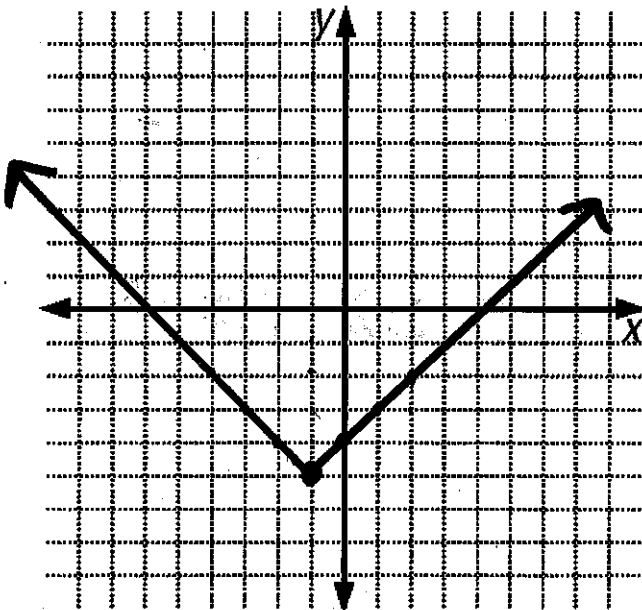
What is the y-intercept?  $(0, -2)$



7. Graph by finding the vertex and making a table.

$y = |x + 1| - 5$

Vertex:  $(-1, -5)$



8. Graph using intercepts.

$5x - 3y > 15$

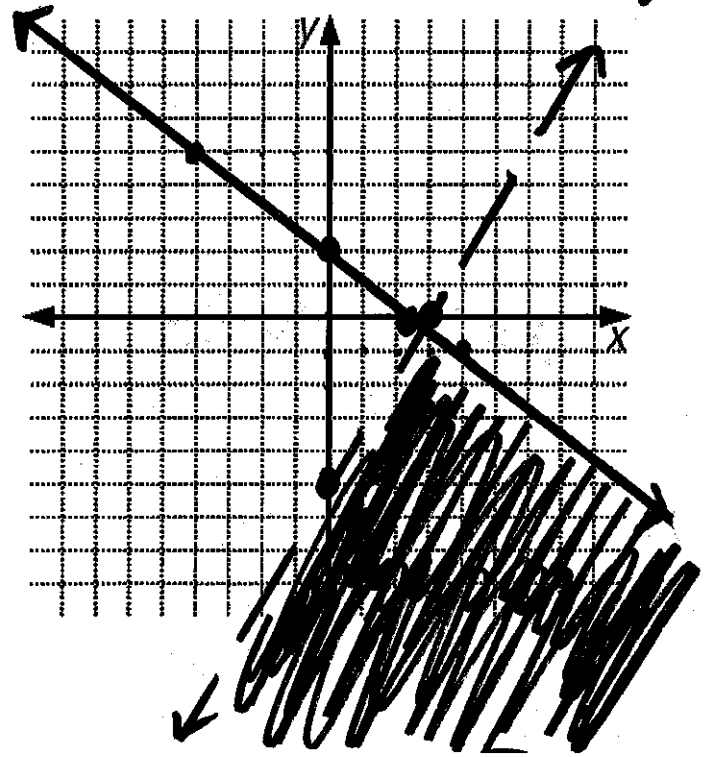
$y \leq \frac{-3}{4}x + 2$

Test points for shading.

$(0, -5)$   
 $(3, 0)$

$(0, 2)$   
 $(\frac{8}{3}, 0)$

$0 = \frac{-3}{4}x + 2$   
 $-2 \cdot \frac{4}{-3} = x$   
 $\frac{8}{3} = x$



## UNIT 2 TEST REVIEW

9. Read the problems below. Define variables, write two equations, and solve the system

a) Your teacher is making your Algebra 2, Unit 2, test worth 100 points. The test has 35 questions. There are two point ( $x$ ) questions and four point questions ( $y$ ) on the test. How many of each type of questions are on the test?

$$(20, 15)$$

b) Michelle is catering a banquet for 500 people. Each person will be served either fish ( $x$ ) or steak ( $y$ ). The fish costs \$9 each and the steak cost \$12 each. Michelle spent \$5400. How many dishes of each type did she serve?

$$(300, 200)$$

10. Now Sarah is selling necklaces and rings to make more money for her summer vacation. The necklaces cost \$7 and the rings cost \$8. She needs to make at least \$600.

a. Define the variables.  $x$  = necklaces

$y$  = rings

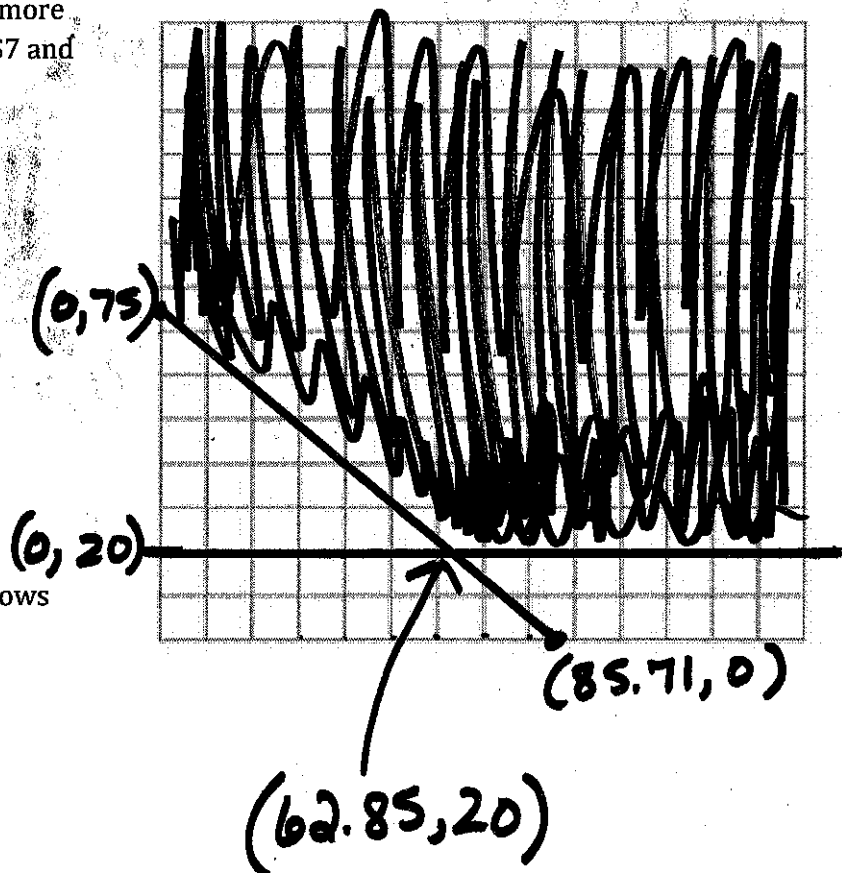
b. Write an inequality to represent the income for the jewelry sold.

$$7x + 8y \geq 600$$

c. Sarah already has 20 orders for the rings, so she knows she will sell at least 20 rings. Write an inequality to represent this situation.

$$y \geq 20$$

d. Graph the inequalities and the intersection.



11. Suppose you are selling cases of mixed nuts and roasted peanuts. You can order no more than a total of 500 cans and packages and spend no more than \$600. How can you maximize your profit? How much is the maximum profit?

**Mixed Nuts**  
 12 cans per case  
 You pay ..... \$24 per case  
 Sell at ..... \$350 per can  
 \$10 profit per case!

**Roasted Peanuts**  
 20 packages per case  
 You pay ..... \$15 per case  
 Sell at ... \$1.50 per package  
 \$15 profit per case!

Let  $x$  = number of cases of mixed nuts ordered.  
 Let  $y$  = number of cases of roasted peanuts ordered.  
 Let  $P(x, y)$  = total profit.

$$12x + 20y \leq 500$$

$$24x + 15y \leq 600$$

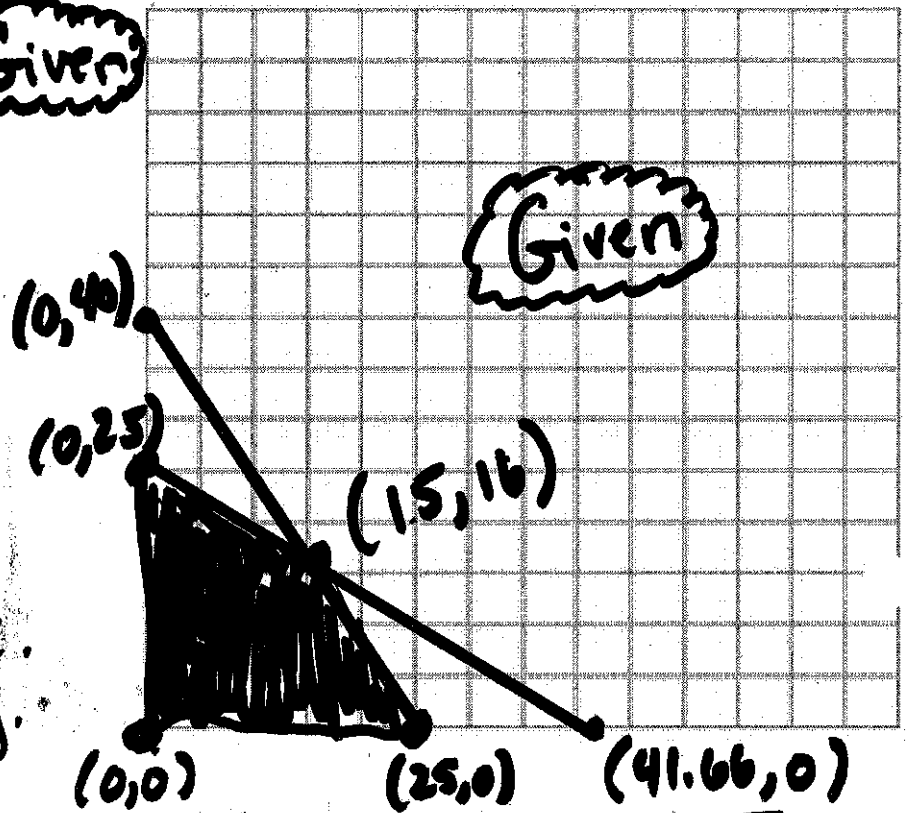
**Given**

\* You have to find  $P(x, y)$

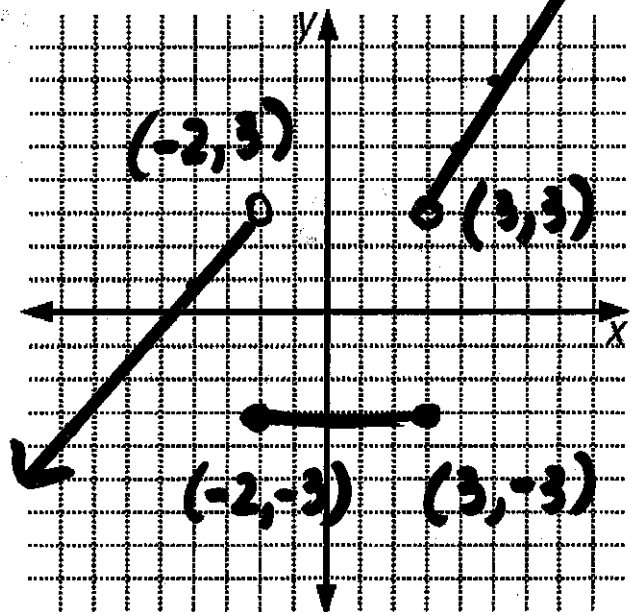
$$P(x, y) = 18x + 15y$$

Buying 15 cases of  $x$ .  
 16 cases of  $y$ .

For a profit of \$510.



12. Graph  $f(x) = \begin{cases} x + 5; & x < -2 \\ -3; & -2 \leq x \leq 3 \\ 2x - 3; & x > 3 \end{cases}$



## UNIT 2 TEST REVIEW

13. Evaluate the following.

$[3.5] + [-3.5] =$

 $-1$ 

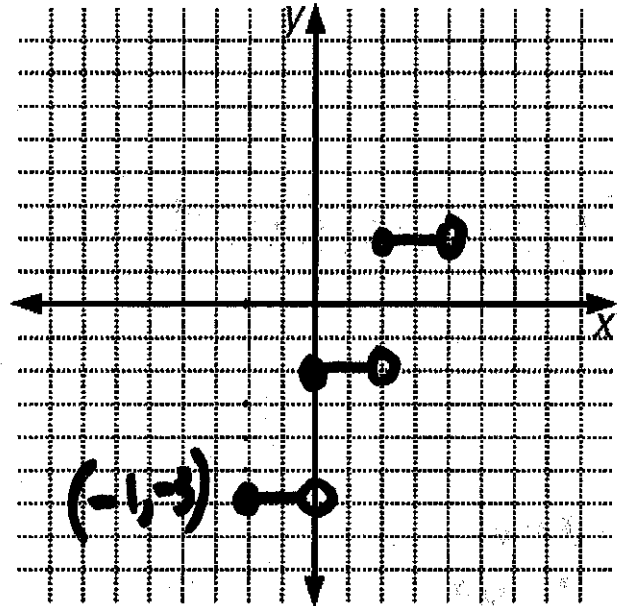
$[2.1] - [-.999] =$

 $3$ 

$[5] + [215] =$

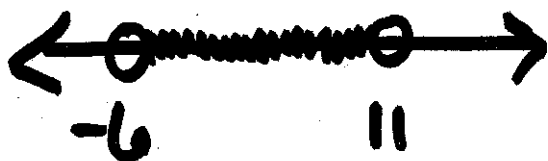
 $5$ 14. Graph the step function:  $f(x) = 2|x + 1| - 3$ 

- List the translations and the step.
- Include 3 steps
- Use  $\frac{1}{2}$  as your scale on both axes

15. Solve the inequalities for  $x$ . Graph your solutions on a number line.

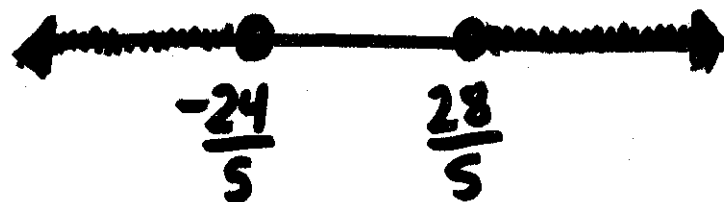
$|10 - 4x| < 34$

$-6 < x < 11$



$|5x - 2| - 4 \geq 22$

$x \geq \frac{28}{5} \text{ or } x \leq -\frac{24}{5}$

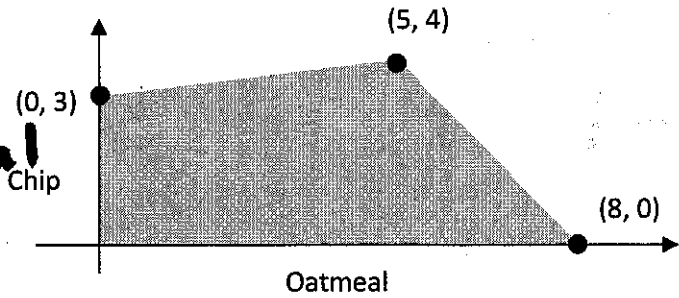


16. Tim makes a profit of \$5.00 on every dozen chocolate chip cookies and \$3.00 on every dozen oatmeal cookies.

What is his maximum profit? When does this occur?

$$P(x, y) = 5y + 3x$$

\$35; 5 doz. oatmeal  
4 doz. C.C.



17. Without graphing, classify each system as *independent*, *dependent*, or *inconsistent*. You must find  $m$  and  $b$ .

a. 
$$\begin{cases} y = -3x + 5 \\ 4x + 2y = 5 \end{cases}$$

b. 
$$\begin{cases} 2x + 7y = 24 \\ 4x + 14y = 24 \end{cases}$$

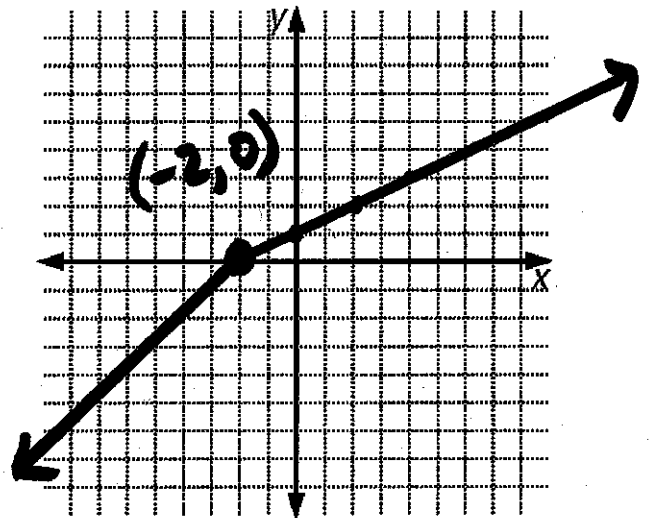
Inconsistent

Dependent

18. a. Graph the function:  $f(x) = \begin{cases} x + 2 & x < -2 \\ \frac{1}{2}x + 1 & x \geq -2 \end{cases}$

$$y = x + 2$$

$$y = \frac{1}{2}x + 1$$



b. Find each of the following:

$f(-6) =$

-4

$f(-2) =$

0

$f(20) =$

11

$f(-4) =$

-2