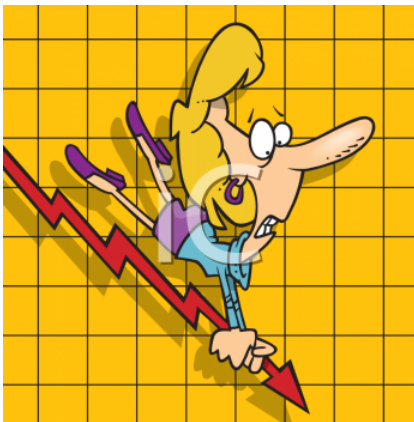


Unit 3 Notes

Lines and Linear Equations

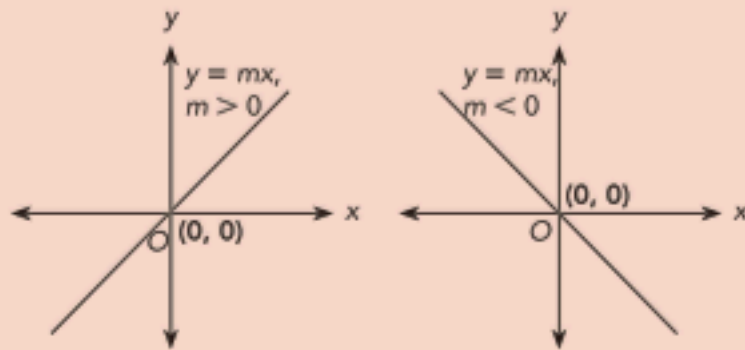


Tentative Schedule

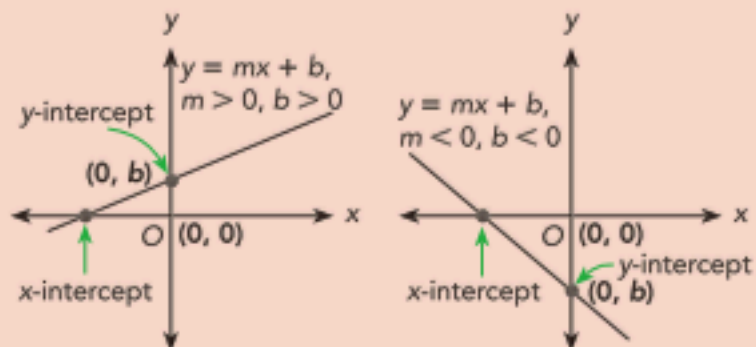
Day	Date	Class Work	Assignment
	Wed. 10/1 (S) Thurs. 10/2 (R)	Quest #2	Watch Video #3.1 and Complete Notes Interpreting Slope
1	Fri. 10/3	P.S. #3.1	Watch Video #3.2 and Complete Notes Graphing Lines
2	Mon. 10/6 (S) Tues. 10/7 (R)	P.S. #3.2	Watch Video #3.3 and Complete Notes Finding Equations of Lines
3	Wed. 10/8	P.S. #3.3	Watch Video #3.4 and Complete Notes Real World Problems
3.5	Wed. 10/8 (R) Thurs. 10/9 (S)	Lab: Point-Slope Form	
4	Thurs. 10/9 Tues. 10/14	P.S. #3.4 Quiz #3	Correct and Complete all Problem Sets
5	Wed. 10/15	Review for Test #3	Review for Test #3
6	Thurs. 10/16 Fri. 10/17	Test #3	Watch Video #4.1 and Complete Notes

Name: _____

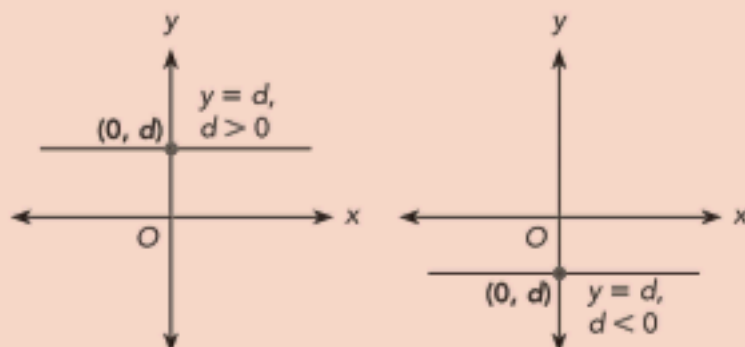
An equation of a line that passes through the origin, $O(0, 0)$ is $y = mx$.



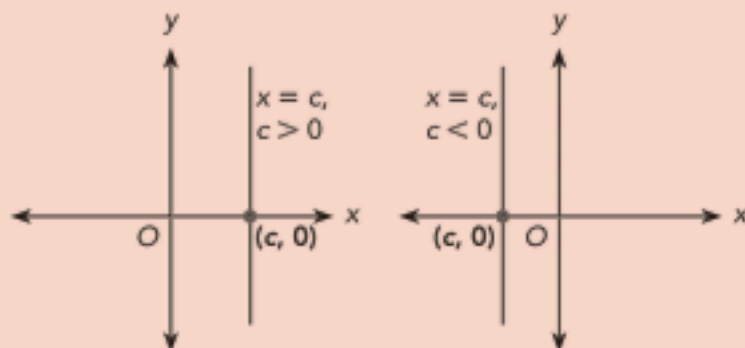
The equation of a line that intersects the y -axis at $(0, b)$ is $y = mx + b$.



An equation of a straight line parallel to the x -axis and passing through the point $(0, d)$ is $y = d$, where d is the y -intercept.



An equation of a straight line parallel to the y -axis and passing through the point $(c, 0)$ is $x = c$, where c is the x -intercept.



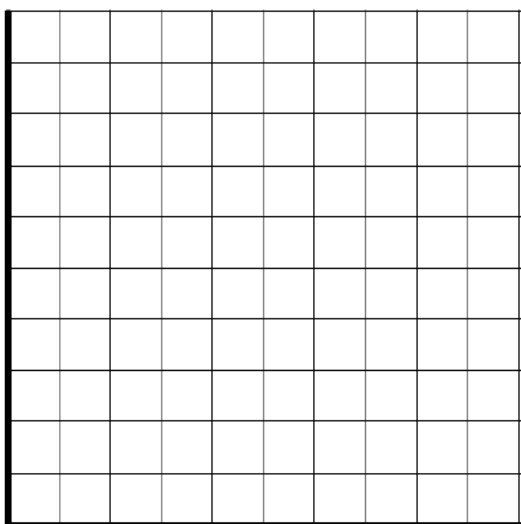
Notes 3.1 - Interpreting Slope

- 1.) If you leave home and walk in a given direction at a steady pace, your distance, d feet, from home is directly proportional to the time, x minutes, you walk. You can use a table and a graph to represent this proportional relationship.

Time (x minutes)	1	2	3	4	5
Distance from Home (d feet)	250	500			

- a.) Fill in the rest of the chart.
b.) What is the constant of proportionality?

- c.) Graph the information given in the chart.



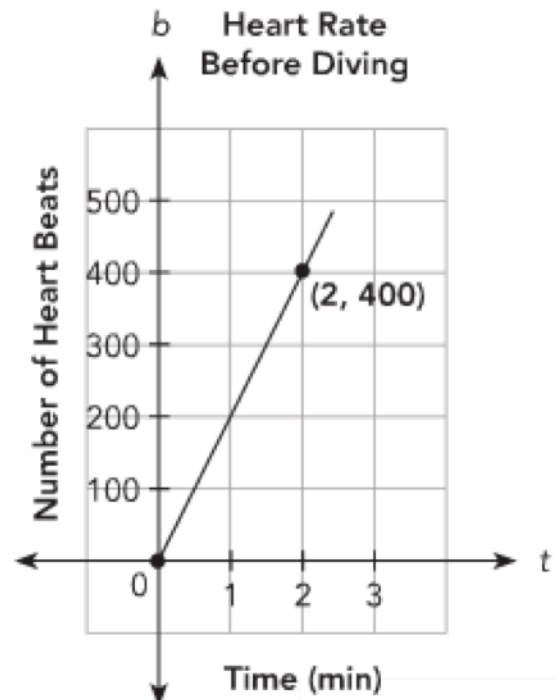
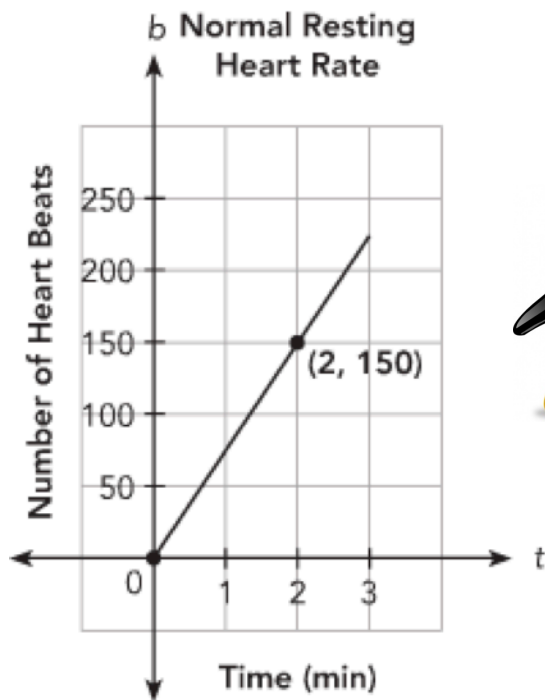
- d.) Using $\frac{\text{rise}}{\text{run}}$, find the slope of the line.

- e.) Is the relationship linear, quadratic, or exponential?

A function is _____ if the rate of change (slope) is _____.

Slope Formula:

2.) The graphs give information about a penguin’s number of heartbeats, b , over time, t minutes, during normal resting and just before diving. When is the penguin’s heart rate greater, during normal resting, or just before diving?

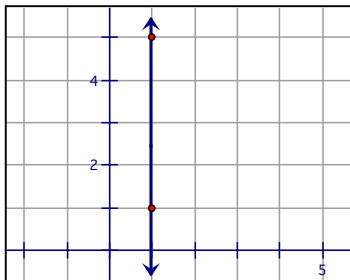
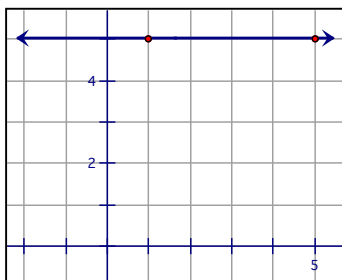
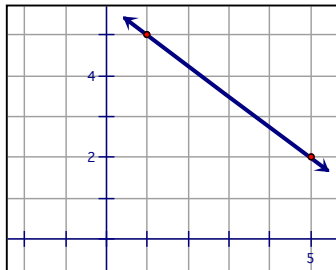
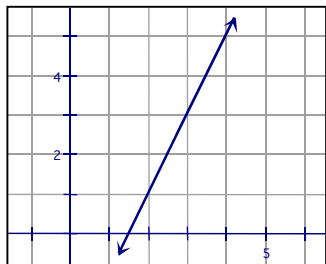


3.) When will the slope of a line be positive?



4.) When will the slope of a line be negative?

5.) Find the slope of each line.



6.) Determine the slope of the line that passes through $(2, -5)$ and $(7, -10)$.

7.) Determine the slope of the line that passes through $(-5, 7)$ and $(-5, 9)$.

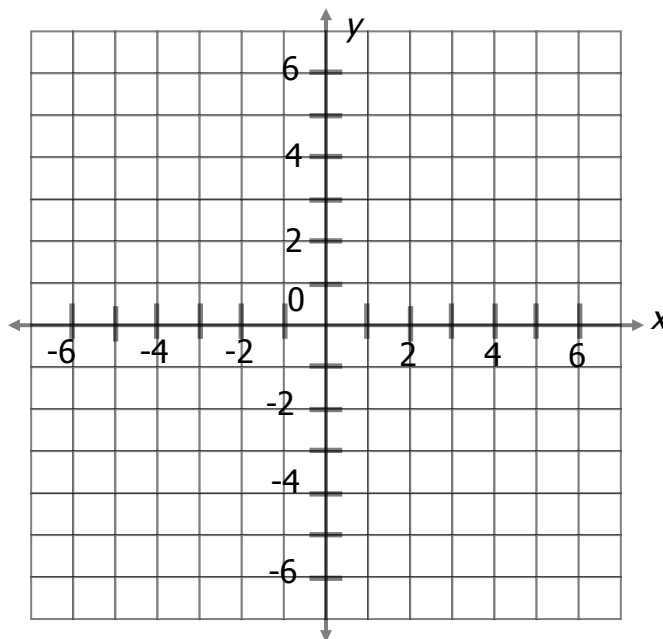
8.) Determine the slope of the line that passes through $(-7, 8)$ and $(-9, 8)$.

9.) Determine the value of r so the line that passes through $(5, 7)$ and $(9, r)$ has a slope of -2 .

Notes 3.2 - Graphing Lines

Graph the line.

1.) $4y + x = -12$			
x		y	Coordinate
4	$-\frac{1}{4}(4) - 3$	-4	(4,-4)
8	$-\frac{1}{4}(8) - 3$	-5	(8,-5)
12	$-\frac{1}{4}(12) - 3$	-6	(12,-6)



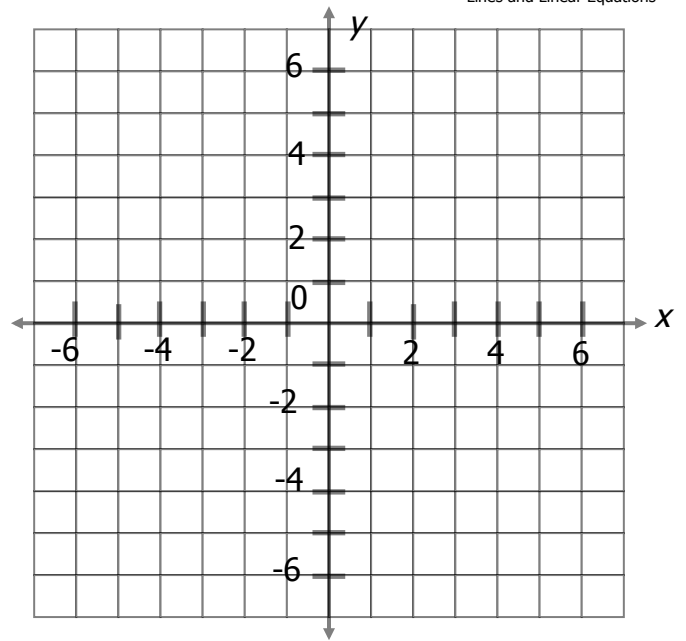
Look at the equations of the lines that are shown to you.

Write down some observations.

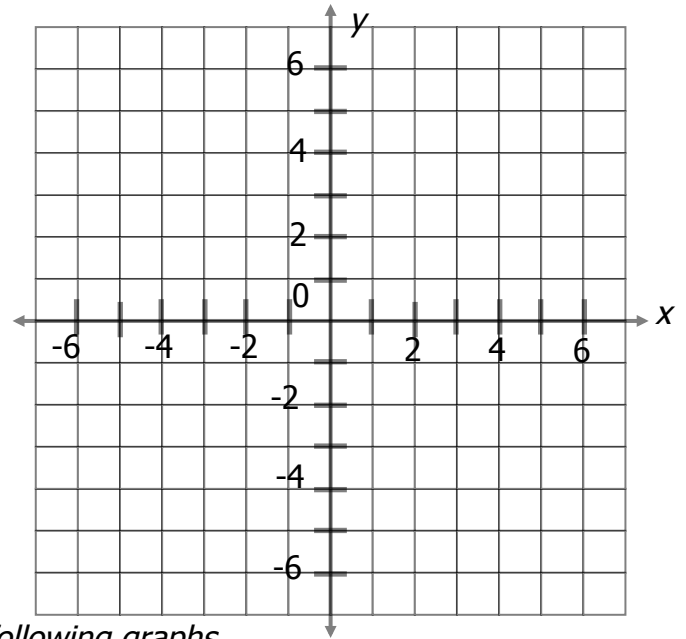
Slope-Intercept Form	Point-Slope Form
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Graph the following lines on the set of axes below.

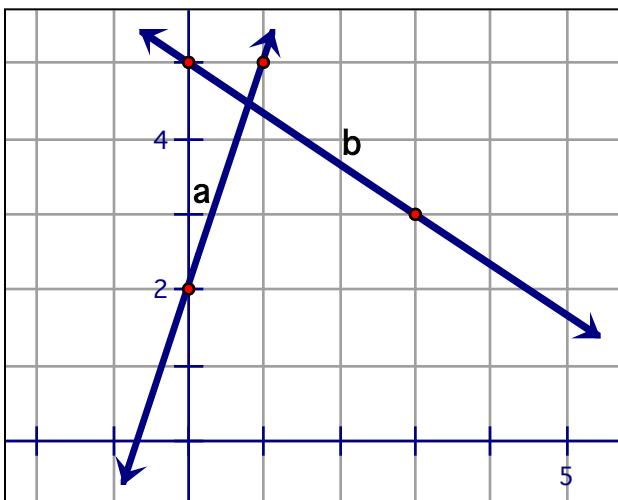
1.) $3y = 12x - 20$



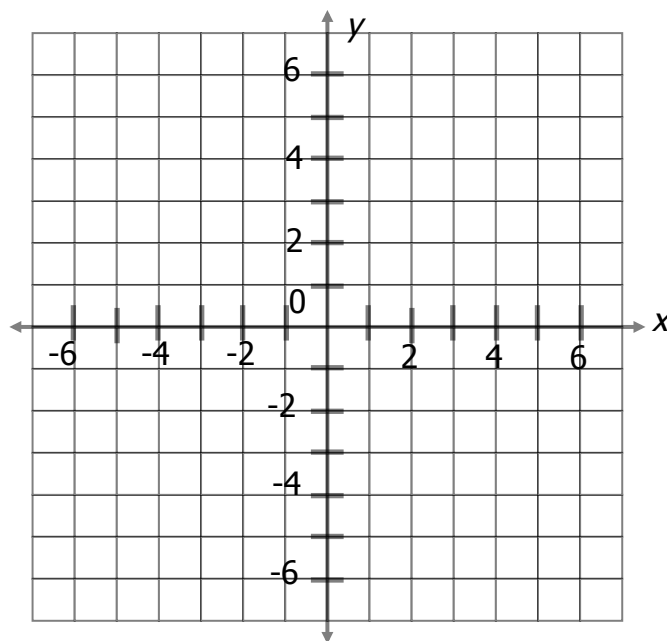
2.) $2x - 8y = -24$



Determine the equations of the lines shown in the following graphs.



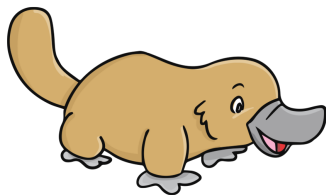
- 4.) Find the equation of a line that passes through the points $(6,1)$ and $(7,-4)$ using the slope-intercept form.



- 5.) How can you tell if two lines are parallel? Use your calculators to test your conjectures.
- 6.) An equation of a line is $2y = 6 - 3x$. Write an equation of a line parallel to this given line that has a y -intercept of 6.
- 7.) Write an equation of the line that passes through $(5,8)$ and $(-9,8)$.

8.) Write an equation of the line that passes through $(-7,1)$ and $(-7,5)$.

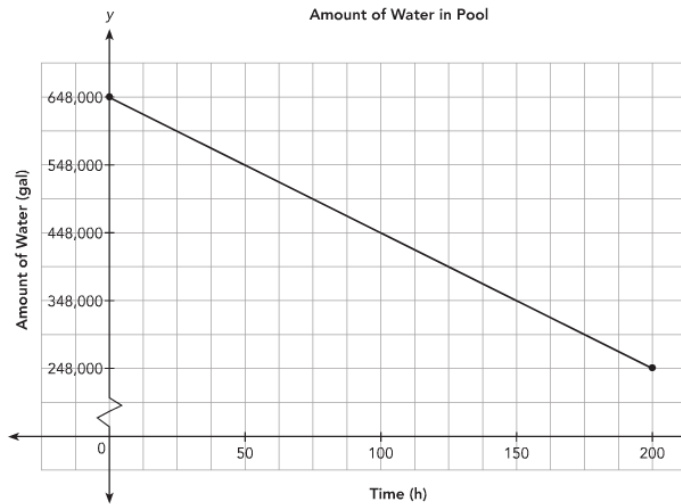
9.) Write an equation of the line that passes through $(5,1)$ and is parallel to the y -axis.



10.) Write an equation of the line that passes through $(4,-8)$ and is parallel to the x -axis.

Notes 3.4 - Real-World Applications: Linear Equations

- 1.) A swimming pool when full holds a certain amount of water. When the drain is opened, the amount of water in the pool drains out at a constant rate. The graph shows the amount of water, W gallons, in the pool h hours after the drain is opened.



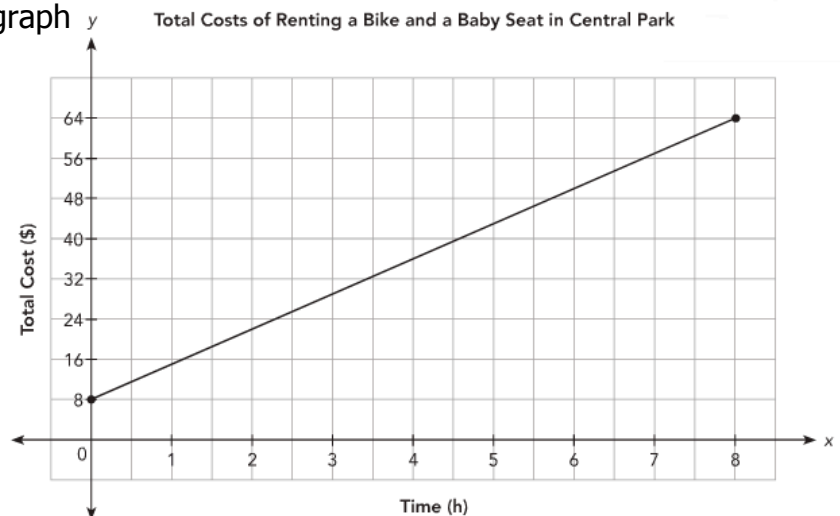
- a.) Find the vertical intercept of the graph and explain what information it gives about the situation.

- b.) Find the slope of the graph and explain what information it gives about the situation.

- 2.) Jeanette rents a bike while visiting a city. She pays \$7 per hour to rent the bike. She also pays \$8 to rent a baby seat for the bike. She pays this amount for the baby seat no matter how many hours she rents the bike. The graph shows her total cost, C dollars, after h hours.

- a.) Find the vertical intercept of the graph and explain what information it gives about the situation.

- b.) Find the slope of the graph and explain what information it gives about the situation.

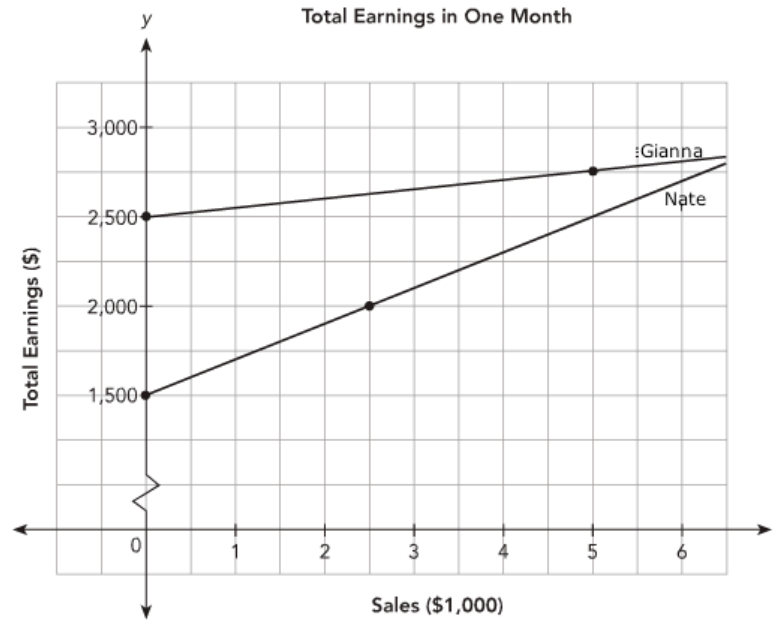


3.) Anna and Michael are salespeople. Each of them earns a fixed monthly salary plus an additional percent of the amount, in dollars, that he or she sells that month. So, the total monthly amount, E dollars, a salesperson earns depends on how much, in s dollars, he or she sells.

a.) Find the fixed monthly salary for each person.

b.) Both Anna and Michael earn a percent commission. Who earns more commission?

c.) Find each person's commission.



4.) Write an equation of the line that passes through (1,3) and (2,-4) using slope-intercept form.

5.) Write an equation of the line that passes through (1,3) and (2,-4) using two-point form.

Graph each equation from point-slope form, then put the equation in slope-intercept form.

6.) $y + 2 = 3(x + 1)$

7.) $y + 4 = -\frac{1}{4}(x - 5)$

