The following concepts are covered or reviewed (those present on Friday were taught the notes on Friday):

Exponential graphs have an ***asymptote*** which is an imaginary line that the graph of the function approaches but never, ever crosses (flat part of the graph). The asymptote is written as y = k.

The range will ALWAYS begin or end with the asymptote (k-value). If the exponential graph is a ***floor graph***, then the range ***begins*** with the k-valueand ***ends*** with ***positive infinity*** (k, ∞). If the exponential graph is a ***ceiling graph***, then the range ***begins*** with ***negative infinity*** and ***ends***with the k value (- ∞, k).

The following concept was reviewed today:

***Growth and Decay***

***y= a******+ k***

* If there is a ***negative sign***right after the equal sign, then ***reflection*** occurs which means the graph is turned ***upside down***.

No reflection means original hands (either L or backward L).

 Reflection means hands are upside down (either r or backward r). Reflection starts with the letter r and so the graph must look like an r

* The letter ***a***tells if the graph ***stretches or shrinks***(ignore negative signs when telling if it stretches or shrinks)

If ***a*** is ***greater than one***, then the graph ***stretches.***

If ***a*** is ***less than one***, then the graph ***shrinks***.

* The letter ***b*** tells if the graph represents***growth or decay***.

If ***b*** is ***greater than one***, then it represents ***growth***. This graph would start flat and grow taller.

 ***Growth Factor:*** the number in parenthesis; if it is a fraction, then change it to a decimal using the calculator

***Growth Rate:***  Take the growth factor and change it to a percent which means move the decimal two places to the right and put a percent sign behind the answer

If ***b*** is ***between 0 and one***, then it represents ***decay***. This graph would go down fast, then flatten (looks like an L)

***Decay Factor:*** the number in parenthesis; if it is a fraction, then change it to a decimal using the calculator

***Decay Rate:***  Take the growth factor and change it to a percent which means move the decimal two places to the right and put a percent sign behind the answer

* Notice ***h***is the exponent and moves the graph ***horizontally***(left or right)

This is the opposite of what one normally thinks so a***positive h moves the graph left***and a ***negative h moves the graph right***

* The ***asymptote*** is whatever ***k*** is. The asymptote is written as ***y = k***

Notice ***k*** is found at the end of the equation and moves the graph ***vertically*** (up or down).

A ***positive k moves the graph up*** and a ***negative k moves the graph down***

If  the word problems are **linear functions**, then the following formula should be applied: y = dx + initial amount. The **d** in the formula stands for difference. The number for d will be found next to the word **per**. When plugging in numbers, numbers that represent time should be plugged in for x. Numbers representing money should be plugged in for y. Then follow the steps to solve the equation.

 **Please remind students that if the word problem is linear and paying back money, then the number next to x must be negative. If the word problem is exponential and paying back money, then you must use the exponentialdecay which is subtracting inside the parenthesis.**

**Exponential word problems** should use the following formula: y = initial amount  The letter **r**represents **ratio** which is whatever the amount is changing by. If the problem states **doubles**, then**r = 2.**If the problem states **triples**, then **r = 3,**etc. When plugging in numbers, numbers that represent time should be plugged in for x.

**If there is a percent, then one of the following formulas must be used: (Problems involving a percent:  the value should always be plugged in to the exponent)**

**Exponential Growth** is when something is getting bigger in some way (increasing) and uses the following formula: y = initial value . **t**or **x**represents time and (1 + %) is the **growth rate**. The following words represent growth:  **savings, increase, appreciate**.

**Exponential Decay** is when something is getting smaller in some way (decreasing) and uses the following formula: y = initial value. **t**or **x**represents time and (1 - %) is the **decay rate**. The following words represent decay:  **decrease, depreciate.**

To enter the percent on the TI-36XPRO calculator, then hit the second divide button.