Name:______________________________ Hour: ____________ Date: ____________

NOTES: Section 7.1 – Graph Exponential Growth Functions

Goals: #1 - I can graph exponential growth functions and state the domain and range.

#2 - I can use an exponential growth model in a real life situation.

#3 - I can use an exponential growth model in a real life situation involving compound interest.

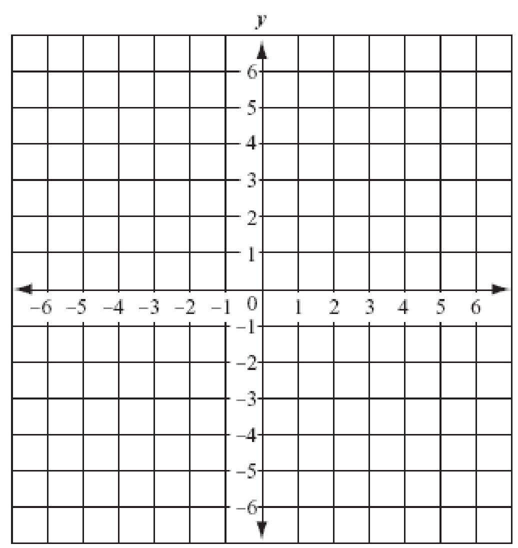
Homework: Lesson 7.1 Worksheet

Exploration #1: Work with a partner and answer the following questions.

1. Complete the table of vaules to graph the following function.

$y = 2^x$

x	y
-2	
-1	
0	
1	
2	



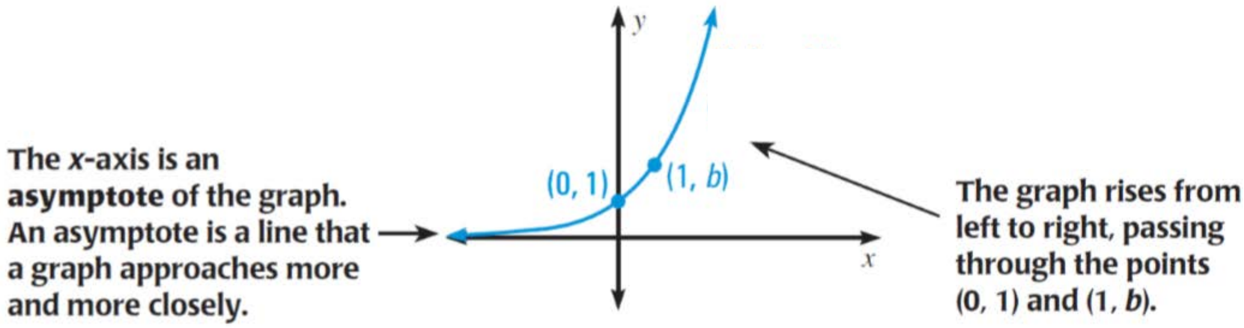
Notes:

An ______________________________ function has the form:

where $a \neq 0$ and the base b is a positive number other than 1.

If __________, then the exponential function is an ______________________________.

Name:______________________________ Hour: ___________ Date: ___________

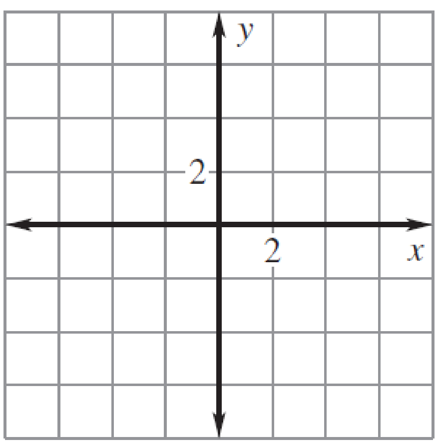


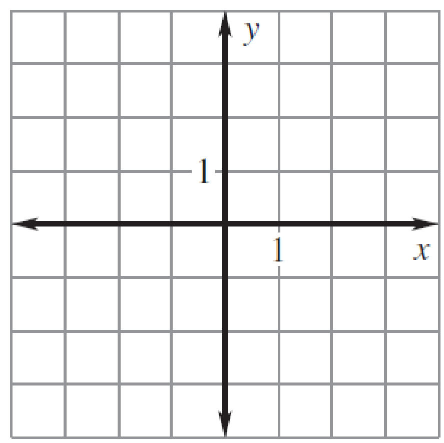
$$\boldsymbol{y = a \cdot b^x}$$

Example #1: Graph the function. Then state the domain and range.

1. $y = \frac{1}{2} \cdot 4^x$

2. $y = -\left(\frac{5}{2}\right)^x$





domain: ____________________

range: ____________________

domain: ____________________

range: ____________________

Exploration #1: Work with a partner and answer the following questions.

1. What transformation would happen if we added k to $y = a \cdot b^x + k$

2. What transformation would happen if we subtracted h to $y = a \cdot b^{x-h}$

Name:______________________________________ Hour: ______________ Date: ______________

Notes:

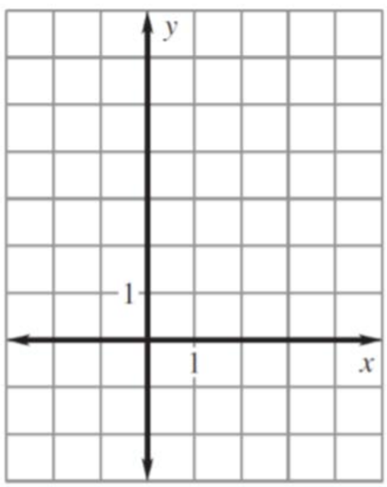
To graph a function of the form $y = a \cdot b^{x-h} + k$, begin by sketching the graph of ________.

Then translate the graph ________________________________ by _______ units and

________________________________ by _______ units.

Example #2: Graph the function. Then state the domain and range.

1. $y = 4 \cdot 2^{x-1} - 3$

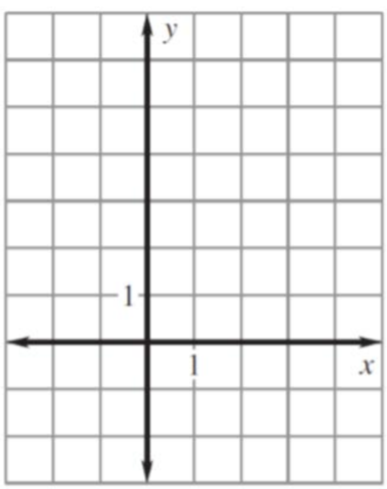


domain: ____________________

range: ____________________

You practice: Graph the function. Then state the domain and range.

1. $y = 2 \cdot 3^{x-2} + 2$



domain: ____________________

range: ____________________

Name:_______________________________ Hour: ___________ Date: ___________

Notes:

When a real-life quantity ________________ by a fixed ___________ each year (or other time period), the amount y of the quantity after t years can be modeled by the equation

$$y = a(1+r)^t$$

Example #3: Use the model to identify the intial amount, the growth factor, and the annual percent increase.

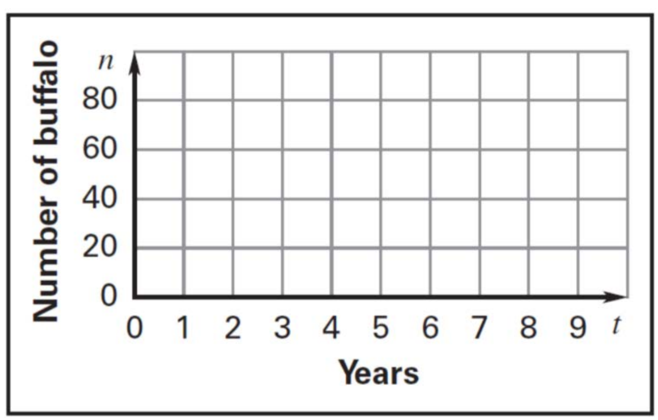
1. $y = 2500(1.50)^t$
2. $y = 0.42(2.47)^t$

Example #3: In the last 12 years, an initial population of 38 buffalo in a state park grew by about 7% per year.

1. Write an exponential growth model giving the number n of buffalo after t years.

2. About how many buffalo were in the park after 7 years?

3. Graph the model. Use the graph to estimate the year when there were about 53 buffalo.



Name:______________________________________ Hour: ______________ Date: ______________

Notes:

_______________________________________ functions are used in real-life situations involving

_______________________________________.

Compound interest is interest paid on an intial investment, called the ____________________, and on previously earned interest.

To represent ____ we use the equation:

$$A = P\left(1 + \frac{r}{n}\right)^{nt}$$

Annually:

Semi-annually:

Quarterly:

Monthly:

Daily:

Example #4: You deposit $2900 in an account that pays 3.5% annual interest. Find the balance after 1 year if the interest in compounded monthly and annually.

1. With interest compounded monthly, the balance after 1 year is:

2. With interest compounded annually, the balance after 1 year is: