

**Notes: T3-54 Exp Review**

Linear Formulas:  $m = \frac{\text{rise}}{\text{run}} = \frac{y - y_1}{x - x_1}$

$y - y_1 = m(x - x_1)$

$f(x) = mx + b$

Exponential Formulas:  $f(x) = a \cdot b^x$

$f(t) = P(1+r)^t$

$f(t) = P(1-r)^t$

1. Decide if each graph or table represents a linear increasing, linear decreasing, an exponential growth, an exponential decay function, or neither. If it is linear or exponential write the equation.

1a) \_\_\_\_\_

\_\_\_\_\_

1b) \_\_\_\_\_

\_\_\_\_\_

1c) \_\_\_\_\_

\_\_\_\_\_

1d) \_\_\_\_\_

\_\_\_\_\_

1e) \_\_\_\_\_

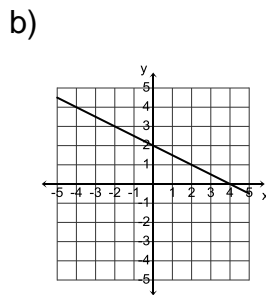
\_\_\_\_\_

1f) \_\_\_\_\_

\_\_\_\_\_

a)

x	f(x)
-2	1
-1	3
0	6
1	8
2	24

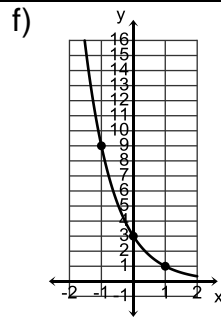
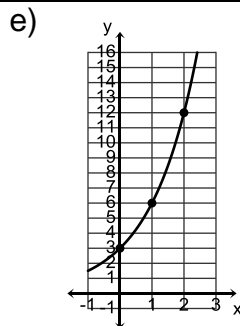


c)

x	f(x)
-1	800
0	200
1	50
2	12.5
3	3.125

d)

x	f(x)
0	-4
1	-2
2	0
3	2
4	4



2. Decide if each equation models a linear increasing, linear decreasing, an exponential growth, or an exponential decay. State the factor/rate of change and the y-intercept.

2a) \_\_\_\_\_

change: \_\_\_\_\_ y-int: \_\_\_\_\_

2b) \_\_\_\_\_

change: \_\_\_\_\_ y-int: \_\_\_\_\_

2c) \_\_\_\_\_

change: \_\_\_\_\_ y-int: \_\_\_\_\_

3. Evaluate, using the functions from 2.

a)  $8[f(-2)]$

b)  $h(2)+10$

3a) \_\_\_\_\_ 3b) \_\_\_\_\_

c)  $\frac{g(4)}{2}$

d)  $h(3)-f(-1)$

3c) \_\_\_\_\_ 3d) \_\_\_\_\_

4. Decide if the situation represents a linear increasing, linear decreasing, an exponential growth, or an exponential decay function. Then write the equation that represents the situation. Use the equation to answer the question.

a) A radioactive material has a half-life of 1 week. If you start with 2,000 particles of the material, how much will be left after 10 weeks?

4a) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

b) You send 1 email to 5 friends and the next day each of those 5 friends forward the e-mail to 5 new friends and the day after that everyone who has received the e-mail forwards it on to 5 new friends and so on. How many people will have forwarded the e-mail on the 7<sup>th</sup> day?

4b) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

c) Keaton wants to get better at the bench press. He currently can bench press 120 pounds and plans to add 5 pounds per week. How much will he be able to bench press in 8 weeks?

4c) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

d) You deposit \$300 in a savings account that pays you 4% interest each month. How much money will be in your savings account after 1 year?

4d) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

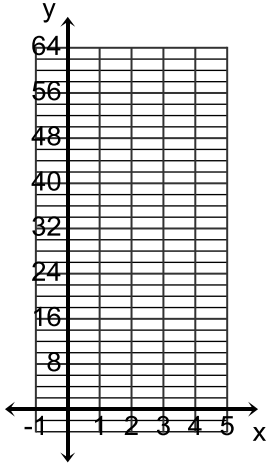
e) Michelle loves donuts and has an addiction to eat them every day. She currently eats 30 per week, but knows she needs to cut back. She plans to eat 3 less per week. How many will she be eating in 6 weeks?

4e) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

f) Radiation is used to kill cancer cells. It is estimated that each radiation treatment kills 15% of the cells per treatment. If there are 250,000 cells in the beginning, how many will there be after 5 radiation treatments?

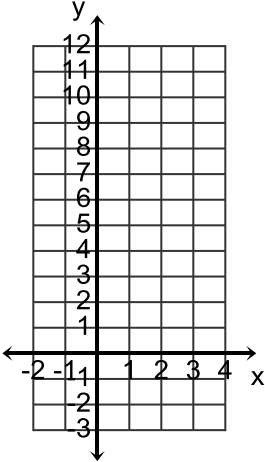
4f) \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

5. Fill in the table and answer the questions.

<p><u>Context</u>          You and your sister are going to share a bag of Skittles. There are 256 Skittles in the bag and you eat half of them in a minute then give the bag to your sister. She eats half of what is left in a minute and gives it back to you. You eat half of what is left and give it back and so forth.</p>	<p><u>Table</u></p> <table border="1" style="margin-left: auto; margin-right: auto; border-collapse: collapse; text-align: center;"> <tr><td style="width: 30px; height: 20px;"></td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">0</td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">1</td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">2</td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">3</td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">4</td><td style="width: 30px; height: 20px;"></td></tr> <tr><td style="width: 30px; height: 20px;">5</td><td style="width: 30px; height: 20px;"></td></tr> </table>			0		1		2		3		4		5		<p><u>Questions</u></p> <p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p> <p>d) What is the value at <math>f(8)</math>?</p> <p>e) What does your answer in part d mean?</p>
0																
1																
2																
3																
4																
5																
<p><u>Graph</u></p> 	<p><u>Starting Point (a):</u></p>  <p><u>Factor of Change (b):</u></p>  <p><u>Equation:</u></p>															

6. Fill in the function table and plot the points, connect the points in order. Then graph the other tables on the same graph, using different colors. Fill in the information about the graphs.

$x$	$f(x) = 2^x$	$f(x)$	$(x, f(x))$
-1			
0			
1			
2			
3			



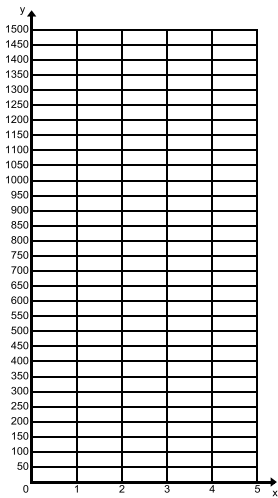
$g(x) = 2^x + 3$	
-1	$3\frac{1}{2}$
0	4
1	5
2	7
3	11

$h(x) = 2^x - 2$	
-1	$-1\frac{1}{2}$
0	-1
1	0
2	2
3	6

Function	Asymptote	Domain & Range	Transformation
$f(x) = 2^x$		D:	none
		R:	
$g(x) = 2^x + 3$		D:	
		R:	
$h(x) = 2^x - 2$		D:	
		R:	

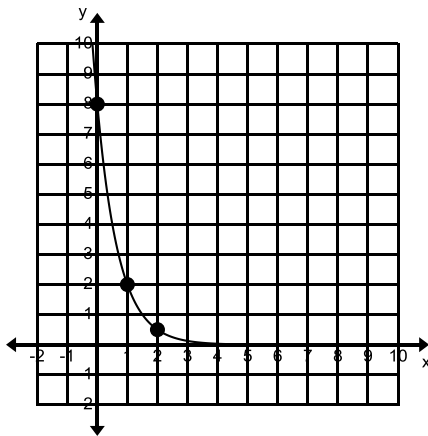
7. Fill in the table and answer the questions.

<u>Context</u>	<u>Table</u>	<u>Questions</u>														
	<table border="1" style="margin: auto; border-collapse: collapse;"> <tr><td style="width: 50px; height: 25px;"></td><td style="width: 50px; height: 25px;"></td></tr> <tr><td style="text-align: center;">0</td><td style="text-align: center;">5</td></tr> <tr><td style="text-align: center;">1</td><td style="text-align: center;">15</td></tr> <tr><td style="text-align: center;">2</td><td style="text-align: center;">45</td></tr> <tr><td style="text-align: center;">3</td><td style="text-align: center;">135</td></tr> <tr><td style="text-align: center;">4</td><td style="text-align: center;">405</td></tr> <tr><td style="text-align: center;">5</td><td style="text-align: center;">1215</td></tr> </table>			0	5	1	15	2	45	3	135	4	405	5	1215	<p>a) discrete or continuous</p> <p>b) domain</p> <p>c) range</p>
0	5															
1	15															
2	45															
3	135															
4	405															
5	1215															
<u>Graph</u>	<p><u>Starting Point (a):</u></p> <p><u>Factor of Change (b):</u></p> <p><u>Equation:</u></p>	<p>d) What is the value at <math>f(16)</math>?</p> <p>e) What does your answer in part d mean?</p>														



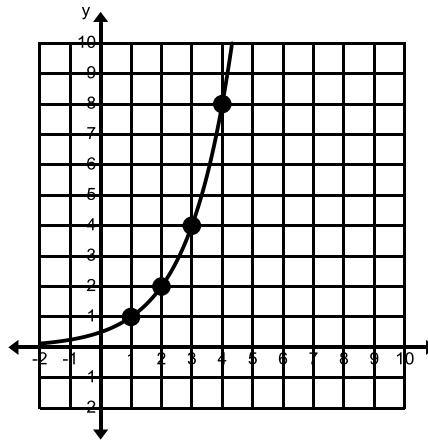
Determine the Exponential Equation,  $f(x) = a \cdot b^x$ , for each of the following graphs.

8)



$f(x) =$


9)



$f(x) =$
