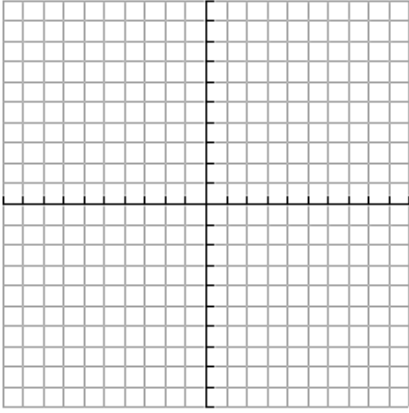
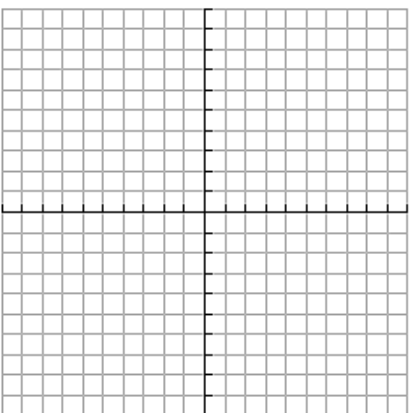
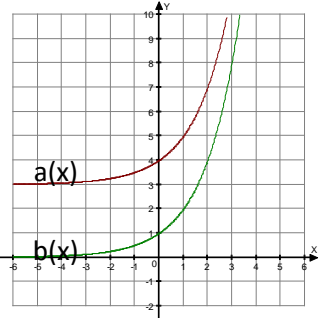
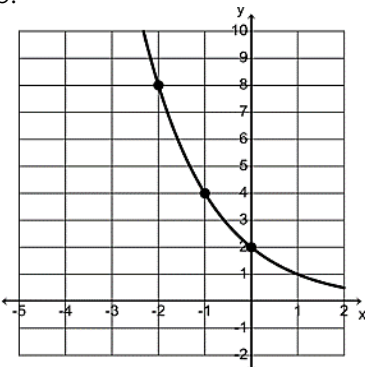
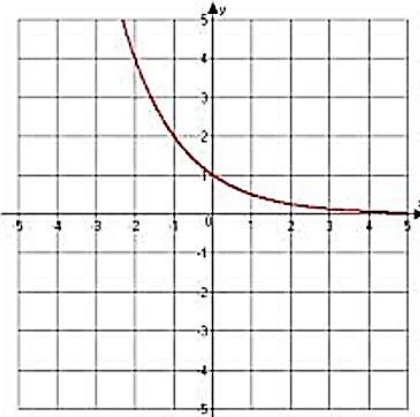
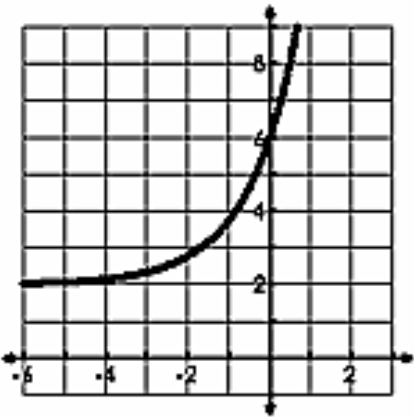


Exponential Functions Unit Review

Skill	Things to remember	Examples													
<p>1. Determine if representations are exponential. Explain why or why not</p>	<p>Exponential Functions: -Variable in exponent -Constant Ratios -Graph is a curve</p> <p>Linear Functions: -Constant differences -Graph is a line</p>	<p>a. Determine if the points are exponential or linear: a.</p> <table border="1" data-bbox="656 363 1089 428"> <tr> <td>x</td> <td>-3</td> <td>-2</td> <td>-1</td> <td>0</td> <td>1</td> </tr> <tr> <td>y</td> <td>0.16</td> <td>0.8</td> <td>4</td> <td>20</td> <td>100</td> </tr> </table> <p>b. (-2, 5) (-1, 4) (0, 3) (1, 2) (2, 1)</p>	x	-3	-2	-1	0	1	y	0.16	0.8	4	20	100	<p>b. Determine if the equations are linear or exponential:</p> <p>a. $y = 3^x - 4$</p> <p>b. $y = 2^2$</p> <p>c. $y = 6^{2x}$</p>
x	-3	-2	-1	0	1										
y	0.16	0.8	4	20	100										
<p>2. Determine if a function is exponential growth or decay and explain why.</p>	<p>$0 < b < 1$: Decay $b > 1$: Growth</p>	<p>a. $y = .75\left(\frac{3}{2}\right)^x$</p> <p>c. What is the function growing by? $Y = 3(2)^x$</p>	<p>b. $y = \left(\frac{1}{2}\right)^x$</p> <p>d. What is constant ratio? $Y = 3(4.5)^x$</p>												
<p>3. Graph an exponential function.</p>	<p>$y = ab^x$</p> <p>Create a table with values (5 points is a must)</p>	<p>a. Graph: $f(x) = \left(\frac{1}{2}\right)^x$</p> 	<p>b. Graph: $f(x) = 3 \cdot 2^{x-1} + 1$</p> 												
<p>4. Describe the transformations of an exponential function.</p>	<p>$f(x) = a(b)^{x-h} + k$</p> <p>a stretches or shrinks AND/OR reflects</p> <p>k moves the function up and down.</p> <p>h moves the function left and right.</p> <p>The new asymptote is the line $y = k$.</p>	<p>a. Given the function $f(x) = 2^x$ write a new equation after a transformation of left 7 and up 3.</p> <p>c. Describe the transformation $h(x) = 10^x$ to $k(x) = 4(10)^{x+1} - 5$.</p>	<p>b. Given the function $g(x) = 2^x$, write a new equation after a transformation of right 9 and reflect across the x-axis.</p> <p>d. Describe the transformation from $a(x)$ to $b(x)$.</p> 												

5. Create equations from a graph or table	$y = y\text{-int}(\text{constant ratio})^x$	a. <table border="1" data-bbox="667 117 1065 233"> <tr> <td>x</td> <td>0</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> </tr> <tr> <td>y</td> <td>$\frac{1}{16}$</td> <td>$\frac{1}{4}$</td> <td>1</td> <td>4</td> <td>16</td> <td>64</td> </tr> </table>	x	0	1	2	3	4	5	y	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16	64	b. 
x	0	1	2	3	4	5											
y	$\frac{1}{16}$	$\frac{1}{4}$	1	4	16	64											
6. Determine characteristics of exponential functions.		a.  <p>Domain:</p> <p>Range:</p> <p>x-Intercept:</p> <p>y-intercept:</p> <p>Interval of Increase:</p> <p>Interval of Decrease:</p> <p>Asymptote:</p> <p>End Behavior:</p> <p style="text-align: center;">as $x \rightarrow -\infty$, $f(x) \rightarrow$ _____</p> <p style="text-align: center;">as $x \rightarrow \infty$, $f(x) \rightarrow$ _____</p> <p>ROC from -2 to 0:</p>	b.  <p>Domain:</p> <p>Range:</p> <p>x-Intercept:</p> <p>y-intercept:</p> <p>Interval of Increase:</p> <p>Interval of Decrease:</p> <p>Asymptote:</p> <p>End Behavior:</p> <p style="text-align: center;">as $x \rightarrow -\infty$, $f(x) \rightarrow$ _____</p> <p style="text-align: center;">as $x \rightarrow \infty$, $f(x) \rightarrow$ _____</p> <p>ROC from -1 to 0:</p>														
7. Determine the y-intercept and asymptote from an equation	You can always substitute 0 in for x to find a y-intercept Asymptote: $y = k$ No 'k' value, the asymptote is $y = 0$.	a. Determine the y-intercept and asymptote of the function $y = 3(2)^x$.	b. Determine the y-intercept and asymptote of the function $y = 4(\frac{1}{2})^x - 2$.														
8. Average Rate of Change	$m = \frac{y_2 - y_1}{x_2 - x_1}$	a. $f(x) = 2(\frac{1}{5})^x$ for $x = -1$ and $x = 0$	b. $g(x) = \frac{1}{2}(3)^{x+1}$ for $[0, 5]$														

<p>9. Determine the growth/decay factor and percent.</p>	<p>$(1 + r)$ and $(1 - r)$ represent the growth and decay factors</p> <p>Percent is just the r value</p>	<p>a. $y = 3(1.25)^x$</p> <p>Determine if the function is growth or decay:</p> <p>Factor:</p> <p>Percent:</p>	<p>b. $y = 2(.84)^x$</p> <p>Determine if the function is growth or decay:</p> <p>Factor:</p> <p>Percent:</p>
<p>10. Applications of exponential functions.</p>	<p>$y = a(1 + r)^t$</p> <p>$y = a(1 - r)^t$</p> <p>$A = P\left(1 + \frac{r}{n}\right)^{nt}$</p>	<p>a. Duke deposits \$2000 into a bank account that pays 5% interest compounded monthly. Find the balance in the account after 4 years.</p> <p>Model: _____</p> <p>Solution: _____</p>	<p>b. The value of the Barbie Dream House is \$125,000. This house is in a prime location and appreciates (increases in value) at a rate of 7% per year. How much will the Barbie Dream House be worth in 5 years?</p> <p>Model: _____</p> <p>Solution: _____</p>
		<p>c. A certain radioactive element decays at a rate of 21% per month. If the starting amount was 32 ounces, how much will be left after 1 year?</p> <p>Model: _____</p> <p>Solution: _____</p>	<p>d. Michael is offered two jobs – Job A, which offers him a starting salary of \$20,000 a year with a 5% raise each year he works there and Job B, which offers him a starting salary of \$25,000, but only a 3% raise each year. Michael plans to work to work at the job for 7 years. Which job should he pick and why?</p>