

Exponential Functions Unit Review

Skill	Things to remember	Examples	
7. Determine the y-intercept and asymptote from an equation	<p>You can always substitute 0 in for x to find a y-intercept</p> <p>Asymptote: $y = k$</p> <p>No 'k' value, the asymptote is $y = 0$.</p>	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 $[0, 5]$
9. Determine the growth/decay factor and percent.	<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>
10. Applications of exponential functions.	$y = a(1 + r)^t$ $y = a(1 - r)^t$ $A = P\left(1 + \frac{r}{n}\right)^{nt}$	<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>