

Exponential Functions Review

- 1) The function $y = 187900 (1.025)^x$ represents the value of a home x years after purchase. How much is the home worth after 12 years?.

- 2) The function $y = 290,000 (0.92)^x$ represents the value of an old home that has been abandoned by its owners x years ago. Find the decay rate of the old home.

- 3) Use your knowledge of exponents and logarithms to solve these equations.
 - a. $3(10^x) = 3,000$
 - b. $10^{2x-1} = 100$
 - c. $10^{2x} - 3 = 997$
 - d. $10^x = 1$

 - e. $-2(10)^{x+4} = -.002$
 - f. $10^{x/2} = 25$
 - g. $\frac{3}{2}(10)^{x+2} = 1500$
 - h. $3(10)^{x+4} + 3 = 15$

- 4) A 100 milligram sample of Carbon-10 has a half-life of 19.29 seconds. Write an exponential function to model its decay. Let x = time in seconds and $f(x)$ = the amount of Carbon-10 remaining in the sample.

Use what you know about solving exponential equations with base 10 to solve the following growth problem.

- 5) In a drop of pond water, there are 18 protozoa. Ten hours later, there are 180 protozoa in the dish. $P(t) = 18(10^{0.1t})$ provides an exponential growth model that matches these data points.
 - a. Use the given function to estimate the time when the bacteria population would be expected to reach 500,000.

6)

Describe the effect on the graph when...	$y = a \cdot b^{x+c} + d$	$y = a \cdot \log (bx + c) + d$ *Honors Only*
a is negative		
a increases		
c increases		
c decreases		
d increases		
d decreases		

7) For each of the functions describe the key characteristics.

	$y = -2^{x+4} - 3$	$y = \log(x+2)$ *Honors Only*
Domain		
Range		
Asymptotes (if any)		
End behavior as $x \rightarrow \infty$		
End behavior as $x \rightarrow -\infty$		
Sketch of the function		