Name:_____Period:

Algebra 2: Exponential word problems and Logarithms 2015

1) How many hours will it take a culture of bacteria to increase from 20 to 2000 if the growth rate per hour is 85%?

2) A radioactive substance has a half-life of 32 years. Find the constant k in the half-life decay formula. How long will it take a 100-gram sample to decay to 10-grams?

3) A home in Cathedral City was valued at 175,000 in 2000 and is now valued at 280,000 in 2015. Find the rate per year of appreciation.

4) You deposit $500 into an account earning 5% compounded daily. How much will be in the account after 5 years?

5) A city had 42,000 residents in 1980 and 128,000 residents in 2015. Use the continuous growth equation and determine what the population should be in 2020. Let $t = 0$ correspond to 1980

6) Use the formula $pH = -\log\left[H^+\right]$ to find the pH of each substance given its concentration of hydrogen ions.
   a) Tomato juice: $\left[H^+\right] = 7.94 \times 10^{-5}$ mole per liter

   b) Toothpaste: $\left[H^+\right] = 1.26 \times 10^{-10}$ mole per liter