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I. Complete each exponential word problem. Must show work to receive credit!!

1.) During the 19 th century, rabbits were brought to Australia. Since rabbits had no natural enemies on that continent, their population increased rapidly. Suppose there were 65,000 rabbits in Australia in 1865 and the population is growing at 16% each year?		
a.) Write a function that expresses the situation above. $A = 65000(1.16)^t$	b.) What is the population of the rabbits in 1872? 183,704 rabbits	c.) When did the rabbit population reach 250,000? 1874

2.) In 1970, the average teacher earned \$9,250. In 2000, the amount increased to \$25,962.		
a.) What is the rate of growth? 3.5%	b.) What will a teacher be making in 2020 (assuming the salary is growing each year)? \$51,660.57	c.) In how many years will a teacher earn 1 million dollars for a salary? 136.1 years

3.) Ben's Extreme Logging Co., purchase a log retrieval machine for \$300,000 where its price has depreciated each year by 20%.		
a.) Write a function that expresses the situation above. $A = 300,000(.8)^t$	b.) Ben believes he should start looking for a buyer when the value hits a fourth of its original amount; when will this be? 6.2 years	c.) If the value drops below \$60,000. It will probably be best not to sell the machine, but keep it for parts. When will the retriever's value be \$60,000? 7.2 years

4.) Joe wants to invest \$1,500 into an account that has a 5% interest rate.		
a.) Find the amount in the account after 6 years comp'd quarterly. \$2,021.03	5.) A \$650 is invested into an account with a 7% interest rate. a.) How long will it take for the investment to be \$2,925 if it's comp'd semiannually? 21.5 years	6.) A \$2,225 is invested in an account for 5 years. a.) What is the interest rate if the investment triples and is comp'd monthly? 22.17%
b.) Find the amount in the account after 6 years comp'd continuously. \$2,024.79	b.) How long will it take for the investment to double if it's comp'd continuously? 9.9 years	b.) What is the interest rate if the investment is 4 times the original amount and is comp'd continuously? 27.73%
c.) Which scenario yielded the most money and by how much? comp'd continuously by \$3.76		

II. Complete each logarithmic word problem. Must show work to receive credit!!

7.) Use the pH scale "formula" for the following:

a.) Calculate the pH and classify each substance.		
i.) Tomato juice: $[H^+] = 3.2 \times 10^{-4} M$ 3.5 → acidic	ii.) Seawater: $[H^+] = 5.0 \times 10^{-9} M$ 8.3 → basic	b.) Calculate the hydrogen ion concentration of each. i.) pH of milk is 6.5 $3.2 \times 10^{-7} M$ ii.) pH of (tap) water is 7.3 $5.01 \times 10^{-8} M$

8.) Use the decibel scale "formula" for the following:

a.) A clap of thunder has an intensity measured at 1.3 W/m ² . What is a thunderclap decibel intensity level? 121 dB		
b.) The intensity level of sound of a loud rock concert was measured to be 115 dB. Find the intensity in W/m ² ? $32 \times 10^{-1} W/m^2$	c.) The drilling of a jackhammer was measured at 132 dB. The sound of a whisper was measured at 28 dB. Find the ratio of the intensity of the drilling to that of the whisper. 2.5×10^{10}	

9.) Use the memory recall "formula" for the following:

a.) Calculate the percentage that was retained.		
i.) 3 months after info is given 66.7%	ii.) 28 weeks after info is given 63.3%	b.) Determine the number of months in which info is retained after the info is given. i.) 65% of the information was retained 4.3 months ii.) 1/5 of the information was retained 1042 months