

## 5.4-5.5 Review

AA2

Name: \_\_\_\_\_

Hr: \_\_\_\_\_

Solve. Remember to check logarithmic equations for extraneous solutions. Check with the exact answers. The approximate answers are listed in the key.

1.)  $6^x = \frac{1}{216}$

2.)  $3(5^{x-1}) - 7 = 28$

3.)  $4^{(x-4)} \cdot 8^x = 4^{(x+4)}$

4.)  $\frac{2^{4x+12}}{2^{2x}} = 2^{3x-9}$

5.)  $e^x = 3$

6.)  $e^{4x} = e^{x^2+3}$

7.)  $e^{2x} - 7e^x + 10 = 0$

8.)  $\left(1 + \frac{0.10}{12}\right)^{12t} = 2$

9.)  $\log_4 x = 2$

10.)  $2\ln 4x = 15$

11.)  $\ln \sqrt{x+1} = 2$

12.)  $\log_6(x+4) - \log_6 x = \log_6(x+2)$

13.) On the Richter scale the magnitude  $R$  of an earthquake with intensity  $I$  is  $R = \log \frac{I}{I_0}$ ,  $I_0 = 1$ . Find the intensity when the magnitude is 7.2

14.) You deposit money in a savings account. Find the amount of time to triple your money if it is compounded continuously at 3.5%.

15.) In a typing class the average number  $N$  of words per minute typed after  $t$  weeks of lessons was  $N = \frac{157}{1+5.4e^{-0.12t}}$ . Find the time necessary to type 75 words per minute.

16.) The half-life of  $^{239}\text{Pu}$  is 24,100 years. Find the initial amount if the amount after 1000 years is 0.4 grams.

17.) The pH is a measure of the hydrogen ion concentration  $[\text{H}^+]$  of a solution. The model is  $\text{pH} = -\log[\text{H}^+]$ . Find  $[\text{H}^+]$  if the pH is 3.2.

18.) You deposit money into an account that is compounded continuously at 2%. After 10 years the amount is \$2000. Find the initial investment AND the time to double your deposit.

KEY:

1.) -3    2.)  $\approx 2.5$     3.)  $16/3$     4.) 21    5.)  $\approx 1.099$     6.) 1, 3    7.)  $\approx 0.693, 1.609$     8.)  $\approx 6.960$     9.) 16  
12.)  $\approx 1.562$     13.) 15,848,931    14.)  $\approx 31.4$     15.)  $\approx 13.3$     16.)  $\approx 0.41$     17.)  $6.3 \times 10^{-4}$     18.) \$1637.46 and 34.7 yrs