Alg 2B Review Sections 8-1 to 8-4 Fall 2017

1. Does each exponential equation equation represent Growth or Decay?

a) $y = 450(\frac{13}{12})^x$ b) $y = 18(1.0003)^x$ c) $y = 9580(0.998)^x$

2. Use each percent change (increase or decrease) to find the base b of an exponential function.

a) 1.85% increase b) 38% decrease c) 0.43% decrease d) 95% increase

3. Give the percent change (state if it's an increase or decrease) that each exponential equation models.

a) $y = 1300(0.95)^x$ b) $y = 2(1.0075)^x$

4. The population of a city was growing 3.8% each year throughout the late 1800's into the early 1900's. In 1900 the population was 9,250.

a) Find the population in 1914.
b) Find the population in 1895.
c) In how many years will the population reach 50,000? Round to the nearest hundredth.

5. The value of a house in 2005 was $139,000. The value of the house has been declining 5.25% each year.

a) Find the value of the house in 2011.
b) In how many years will the house's value first fall below $50,000? Round to the nearest hundredth.

6. Rewrite each exponential equation as a logarithm.

a) $7^x = 343$ b) $10^5 = x$ c) $x^7 = 1200$

7. Rewrite each logarithmic equation as an exponential.

a) $\log_3 x = 4$ b) $\log_x 25 = 2$ c) $\log 400 = x$

8. Evaluate each logarithm.

a) $\log_9 9$ b) $\log_4 1$ c) $\log 400$ d) $\log_3 27$ e) $\log_{64} 8$ f) $\log_7 \frac{1}{49}$

9. Use the properties of logarithms to write each as a single logarithm.

a) $\log_4 K + 6\log_4 W$ b) $5\log A - 2\log 7$ c) $\frac{1}{2}\log_7 W - \log_7 X + 2\log_7 Y$

10. Use the properties of logarithms to expand each logarithm into several logarithms.

a) $\log_2 \frac{R^4}{\sqrt{C}}$ b) $\log_4 \frac{K^5 R^8}{NQ^6}$

11. Write as single logarithm then evaluate.

a) $3\log_6 3 + 2\log_6 4 - \log_6 2$ b) $\log_{12} 9 - \frac{1}{2}\log_{12} 16 + 2\log_{12} 8$

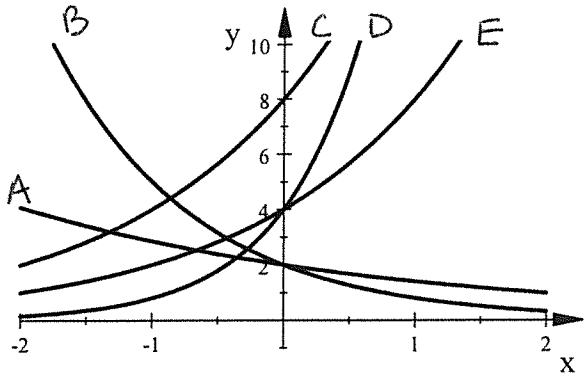
12. Solve each. Round to the nearest hundredth.

a) $5^x = 43$ b) $10^x = 1501$ c) $\log_3 15 = x$ d) $e^x = 11$ e) $\log_6 X = 3$

f) $3^{x+2} - 15 = 32$ g) $2 \cdot e^{4x} + 1 = 99$

13. Match each graph with it's correct equation.

____ $y = 8(2)^x$ ____ $y = 2(0.4)^x$ ____ $y = 4(2)^x$ ____ $y = 2(0.7)^x$ ____ $y = 4(5)^x$



14. You invest $30,000 in an account that pays 9% annual interest. Find the value of the account after 20 years if interest is calculated each of the following ways.

Here are the interest formulas: $I = prt$ $Y = P(1 + \frac{r}{n})^{nt}$ $Y = Pe^{rt}$

a) Simple interest b) Interest compounded annually

c) Interest compounded monthly d) Interest compounded continuously

15. The half-life of a certain radio active substance is 40 minutes. If there are 500g of this substance at 8:00am find the amount remaining at 2:30pm the same day. Round to the nearest hundredth.

16. The number of cells of a certain bacteria doubles every 30 minutes. If there are 200 cells at 9:00 am find the number of cells at 4:45pm the same day.

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1. a) Growth b) Growth c) Decay
2. a) $b = 1.0185$ b) $b = 0.62$ c) $b = .9957$ d) $b = 1.95$
3. a) 5% decrease b) 0.75% increase
4. $y = 9250(1.038)^x$ a) $9250(1.038)^{14} = 15592$

b) $9250(1.038)^{-5} = 7676$ c) $9250(1.038)^x = 50000 \rightarrow x = 45.24$

5. $y = 139{,}000(.9475)^x$ a) $139{,}000(.9475)^6 = \$100{,}575.02$

b) $139{,}000(.9475)^x = 50{,}000 \rightarrow x = 18.96$

6. a) $\log_7 343 = x$ b) $\log x = 5$ c) $\log_x 1200 = 7$
7. a) $3^4 = x$ b) $x^2 = 25$ c) $10^x = 400$
8. a) 1 b) 0 c) 2.60 d) 3 e) $\frac{1}{2}$ f) -2
9. a) $\log_4(KW^6)$ b) $\log\frac{A^5}{49}$ c) $\log_7\frac{\sqrt{W} \cdot Y^2}{X}$
10. a) $4\log_2 R - \frac{1}{2}\log_2 C$ b) $5\log_4 K + 8\log_4 R - \log_4 N - 6\log_4 Q$
11. a) $\log_6 216 = 3$ b) $\log_{12} 144 = 2$
12. a) $x = 2.34$ b) $x = 3.18$ c) $x = 2.46$ d) $x = 2.40$ e) $x = 216$

f) $x = 1.50$ g) $x = 0.97$

13. C $y = 8(2)^x$ B $y = 2(0.4)^x$ E $y = 4(2)^x$ A $y = 2(0.7)^x$ D $y = 4(5)^x$
14. a) \$8400.00 b) \$168,132.32 c) \$180,274.55 d) \$181,489.42
15. 0.58g 16. 9,268,190