Hon Alg 2 Chapter 8 Review Spring 2017

No Graphing Calculator will be used on this test.

1. Tell if each exponential equation represents growth or decay.

a) $y = \frac{3}{7}(1.0047)^x$ b) $y = 800(0.9932)^x$ c) $y = 133(\frac{15}{12})^{-x}$ d) $y = 7.15(\frac{88}{92})^x$

2. Use the given exponential equation to find the % change and whether it represents an increase or a decrease.

a) $y = 25,000(1.003)^x$ b) $y = 175(0.802)^x$

3. Take the given % change and write the base that would be used in an exponential equation.

a) 23% decrease b) 1.09% increase c) 0.67% decrease d) 58% increase

4. The value of a rare painting has been increasing 13% each year. In 2005 the painting was worth $25,000.

a) Find the value of the painting in 1990.
b) Find the value of the painting in 2011.
c) In how many years, to the nearest hundredth, will the painting be worth $1,000,000?

5. The population of a city in 1978 was 900,000 and has been decreasing 5.9% each year.

a) Find the population in 1975.
b) Find the popution in 1999.
c) In how many years, to the nearest tenth, will the population first fall below 180,000?

6. Write each in logarithmic form.

a) $5^3 = x$ b) $x^7 = 72$ c) $4^x = 100$ d) $e^5 = x$ e) $10^x = 211$

7. Write each in exponential form.

a) $\log_3 x = 20$ b) $\log 478 = x$ c) $\ln x = 50$ d) $\log_x 8 = 3$

8. Evaluate each. Round decimal answers to the nearest thousandth.

a) $\log 1000$ b) $\log_4 1$ c) $\log_7 7$ d) $\log_5 25$ e) $\log_{36} 6$ f) $\ln 20$ g) $\log_5 80$

Solve each logarithmic or exponential equation. Round decimal answers to the nearest thousandth.

9. $5^{2x} = 42$ 10. $\log_x 40 = 3$ 11. $3^{x+2} = 30$ 12. $\log_3 x = 5$

13. $\log_4(2x + 7) = 3$ 14. $\log x - \log(x - 6) = 3$ 15. $e^x - 9 = 20$

16. $\ln(x + 1) = 8$ 17. $\log_3 4 + \log_3 x = 5$ 18. $2\log x + \log 5 = 4$

19. $\log_3(x - 6) + \log_3 x = 3$

Hon Alg 2 Chapter 8 Review **ANSWERS** Spring 2017

1. a) Growth b) Decay c) Decay d) Decay

2. a) 0.3% increase b) 19.8% decrease

3. a) $b = 0.77$ b) $b = 1.0109$ c) $b = 0.9933$ d) $b = 1.58$

4. a) \$3997.27 b) \$52,048.79 c) 30.18 years

5. a) 1,080,124 people b) 250,972 people c) 26.5 years

6. a) $\log_5 x = 3$ b) $\log_x 72 = 7$ c) $\log_4 100 = x$ d) $\ln x = 5$ e) $\log 211 = x$

7. a) $3^{20} = x$ b) $10^x = 478$ c) $e^{50} = x$ d) $x^3 = 8$

8. a) 3 b) 0 c) 1 d) 2 e) $\frac{1}{2}$ f) 3.00 g) 2.72

9. $x = 1.161$ 10. $x = 3.42$ 11. $x = 1.096$

12. $x = 243$ 13. $x = 28.5$ 14. $x = 6.006$

15. $x = 3.367$ 16. $x = 2979.96$ 17. $x = 60.75$

18. $x = 44.721$ 19. $x = 9$