## Alg 2 Chapter 6 Review version 2 Spring 2020

Round to the nearest hundredth unless noted otherwise or the situation dictates so.

The test will have one problem like either #1 or #2

\*1. The population of a city has been increasing 3.5% each year. In 2012 the population was 80,000.

- a) Find the value of the population in 2020.
- b) Find the value of the population in 2005.
- c) In how many years will the population become 300,000?

\*2. The value of a real estate investment has been decreasing 6.8% each year In 2015 the value of the investment was \$125,000.

- a) Find the value of the investment in 2009.
- b) Find the value of the investment in 2025.
- c) In how many years will the investment be worth \$60,000?

\*3. Use all three properties of logs to write each as a single log and for part (c) then evaluate.

a)  $4 \log X + 3 \log W - 2 \log Y$ b)  $7 \ln D - (5 \ln B + \ln A) + 6 \ln C$ 

\*4. Use all three properties of logarithms to expand each as much as possible.

a) 
$$\log(J^2K^3)^4$$
 b)  $\ln\left(\frac{N^5}{M^3P^6}\right)$ 

For 5 to 12 solve each equation.

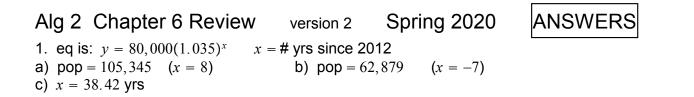
- 5.  $8^{x-4} = 1000$ 6.  $5^{3x} = 6^{x+2}$ 7.  $4e^{x+3} 7 = 30$ 8.  $\log_4(x-6) + \log_4 x = 2$ 9.  $25^{4x} = 125^{x+1}$ 10.  $\ln(x+4) + 9 = 15$
- 11.  $\log(25x+1) \log(x-8) = 3$  12.  $\log_7(x^2 11) = \log_7(x+1)$

\*13. Write the equation of the exponential function ( $y = a \cdot b^2$ ) that passes through these two points: (3,1836) & (6,396576)

The test will have one problem like either #14 or #15

\*14. The half-life of a radioactive substance is 20 minutes. There is 1000 kg of this substance at 11:00 am. Find the amount remaing at 2:15pm the same day.

\*15. The number of cells doubles every 40 minutes. There are 16 cells at 6:00 am. Find the number of cells at 1:50pm.



2. eq is:  $y = 125,000(0.932)^{x}$  x = # yrs since 2015 a) value = \$190,728.04 (x = -6) b) value = \$61,811.48 (x = 10) c) x = 10.423. a)  $\log\left(\frac{X^4W^3}{Y^2}\right)$  b)  $\ln\left(\frac{C^6D^7}{AB^5}\right)$ 4. a)  $8\log J + 12\log K$  b)  $5\ln N - 3\ln M - 6\ln P$ 5. x = 7.32 6. x = 1.18 7. x = -0.778. x = 8 (-2 is an extraneous solution) 9. x = 0.6 10. x = 399.4311. x = 8.21 12. x = 4 (-3 is an extraneous solution) 13.  $y = 8.5(6)^{x}$ 14. 1.16 kg ( $1000(0.5)^{9.75}$ ) 15. 55,109 cells ( $16(2)^{11.75}$ )