Unit 2 Review

Name: _____

Math II

Applications of Exponentials (See in-class handout for additional problems)

1. Find a bank account balance if the account starts with $100, has an annual rate of 4%, and the money left in the account for 12 years.

2. In 1985, there were 285 cell phone subscribers in the small town of Centerville. The number of subscribers increased by 75% per year after 1985. How many cell phone subscribers were in Centerville in 1994?

3. The population of Winnemucca, Nevada, can be modeled by P=6191(1.04)t where t is the number of years since 1990. What was the population in 1990? By what percent did the population increase by each year?

Variation Problems

4. Avery jarred 18 liters of jam after 2 days. Then, she jarred an additional 27 liters of jam after another 3 days of jam-making. How many liters of jam does Avery jar each day?

5. Assume that y varies directly with x. If y = -54 when x = 9, find y when x = -5.

6. Assume a varies directly as b. b = 1 when a = 5. Find b when a = 2.

7. Assume that y varies inversely with x. If y = -2 when x = 9, find y when x = 3.

8. Assume that y varies inversely with x. If y = 4 when x = 12, find y when x = 3.

9. Z varies jointly with w, x, and y. When w = -3, x = -8, y = -3, and z= 72. What is the equation of variation?

10. z varies jointly as x and y. x = 3 and y = 2 when z = 12. Find z when x = 4 and y = 5.

Change each logarithmic expression to an exponential expression.

1. $\log_3 27 = 3$

2. $\log_{36} 6 = 1 / 2$

3. $\log_2 (1 / 8) = -3$

4. $\log_8 2 = 1 / 3$

Change each exponential expression to logarithmic expression.

1. $3^4 = 81$

2. $4^{1/2} = 2$

3. $3^{-3} = 1 / 27$

4. $10^3 = 1000$

Solve for x the following equations.

1. $\log_3 x = 5$

2. $\log_2 (x - 3) = 2$

3. $2 \log_3 (-x + 1) = 6$

Determine the value of each.

1. $\text{Log}_{12} 8$

2. $\text{Log}_{35} 3$

3. $\text{Log}_7 9$

4. $\text{Log}_5 55$

Find the value for x.

1. $8^{4-x} = 4^{5-x}$

2. $7^{3x-2} = 7$

3. $4^{2x} = 4096$

4. $2^{x+4} = 64$

Solve

1. $-2 + \sqrt{d-6} = 4$

2. $-4 + \sqrt{n+11} = 7$

3. $\sqrt{\dfrac{r}{3}} = \sqrt{3r+12}$

4. $\sqrt[3]{x^2 - 1} = 2$

5. $\sqrt{x+7} = x - 5$

6. $\sqrt{x+5} = x - 1$

Simplifying Exponential Expressions:

22) $\left(2x^2\right)\left(4x^3 y^2\right) =$

23) $\left(-3a^2 b\right)\left(6ab^4 c\right) =$

24) $\left(7q^5\right)\left(12q^3 r^5\right) =$

44) $\left(3y^6\right)^2 \left(x^5 y^2 z\right) =$

45) $\left(4h^3\right)^2 \left(-2g^3 h\right)^3 =$

46) $\left(14a^4 b^6\right)^2 \left(a^6 c^3\right)^7 =$

67) $\left(\dfrac{-2d^{11} f^6}{c^{18}}\right)^2 =$

68) $\left(\dfrac{2d^4}{4e}\right)^3 =$

70) $\dfrac{-40s^6}{20s^3} =$

71) $\dfrac{21d^{18} e^5}{7d^{11} e^3} =$

Solve each equation for x. SHOW WORK!

1.) $\dfrac{-4x}{x-8} - \dfrac{11}{x-8} = \dfrac{25}{x-8}$

3.) $\dfrac{3}{6x} - \dfrac{9}{12} = \dfrac{11}{4x}$

5.) $\dfrac{12}{x^2 + 5x + 6} + \dfrac{7}{x+3} = \dfrac{2}{x+2}$