Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Mod 4 Lesson 9 Homework

Solve each of the following for x. Round each answer to the nearest hundredth.

1. $5^{x}=16$ 4. $3^{x}-5=13$
2. $3^{2x}=\left(\frac{1}{9}\right)^{x-10}$ 5. $4^{-x+2}=19$
3. $8(2)^{x-5}=36$ 6. $e^{2x+3}=40$

7. The population of coyotes in a certain county is represented by $P\left(t\right)=120(0.95)^{t}$, where t represents the number of years since 2000. Using this formula, how many coyotes were in the county in the year 2004? How many years, to the nearest tenth of a year, will it take for the population to be cut in half?

8. You buy a new computer for $2100. The value of the computer decreases by 50% annually. When will the computer have a value of $600?

9. You drink a beverage with 120 mg of caffeine. Each hour, the caffeine in your system decreases by about 12%. How long until you have 10mg of caffeine?

10. You invest $3000 in a bank that gets 4.2% interest annually. If the interest is compounded continuously, how long will it take for the initial amount to double?

11. You deposit $1600 in a bank account. Find the balance after 3 years for each of the following situations:

 a) The account pays 2.5% annual interest compounded monthly.

 b) The account pays 1.75% annual interest compounded quarterly.

 c) The account pays 4% annual interest compounded continuously.

Review

1. Solve the equation: $log\_{5}\left(x-10\right)-log\_{5}3=2$
2. Expand $log\_{3}\left(\frac{x^{4}}{y}\right)^{3}$