8.8 Worksheet #3 Name _____
Algebra 1

1. Which of the exponential functions below show **growth** and which show **decay**?

   a. $y = 5(2)^x$ b. $y = 100(.5)^x$ c. $y = 80(1.3)^x$

   d. $y = 20(0.8)^x$ e. $y = 20(1 + 0.025)^x$ f. $y = 40(1 - 0.4)^x$

2. A population of 800 beetles is growing each month at a rate of 5%.
   a. Write an equation that expresses the number of beetles at time x.

   b. About how many beetles will there be in 8 months?

3. Your new computer cost $1500 but it depreciates in value by about 18% each year.
   a. Write an equation that would indicate the value of the computer at x years.

   b. How much will your computer be worth in 6 years?

   c. About how long will it take before your computer is worth close to zero dollars, according to your equation?

4. You invest $100,000 in an account with 1.01% interest, compounded quarterly. Assume you don't touch the money or add money other than the earned interest.
   a. Write an equation that gives the amount of money, y, in the account after x years.

   b. How much money will you have in the account after 10 years?

   c. How much money will you have in the account after 25 years?

5. In 1990, $1,000 is invested at a rate of 6% per year where the interest is compounded semiannually.
   a. What is the growth rate?

   b. What is the initial amount?

   c. How many growth periods are there?

   d. Write an equation that models and growth of the investment, and use it to determine the value of the investment after 15 years.

6. A town with a population of 12,000 has been growing at an average rate of 2.5%
   a. Write an equation to model the population of the town.

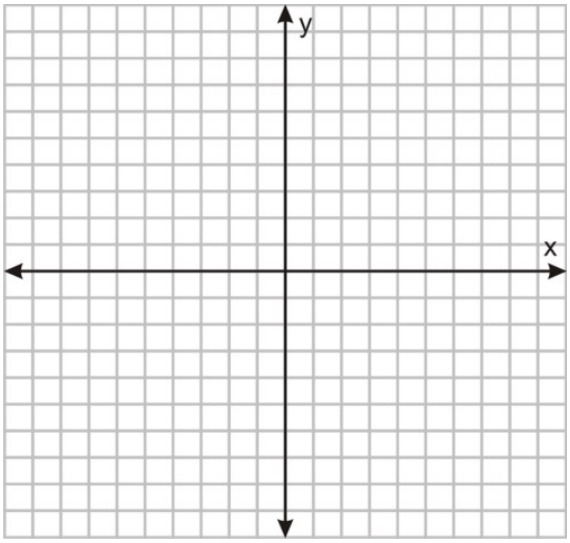
   b. Determine the population of the town in 10 years.

7. If you deposit $5000 into an account paying 6% annual interest compounded monthly, how much money will be in the account after 5 years?

8. If you deposit $500 into an account paying 4% annual interest compounded daily, how much money will be in the account after 6 years?

Graph the following.

9. $y = 3^x - 1$



10. $y = \frac{1}{2} \cdot 2^{x+1} + 2$