Adv Alg

Name: _____
Date: _____Pd___

Applications of Logarithms

I. Circle whether each equation models growth or decay. Then state the rate.

1. $y = 3(.98)^x$ decay/growth rate _____
2. $y = 102(1.04)^x$ decay/growth rate _____
3. $y = .5(1.3)^x$ decay/growth rate _____
4. $y = 12{,}453(.9)^x$ decay/growth rate _____

II. Write an equation for each word problem. Then solve.

5. If $7,000 was put into a savings account that earns 3% interest annually, how long will it take for the account to reach $10,000?

6. An initial population of endangered turtles is 750. The population is expected to grow at a rate of 15% per year. When will the population reach 5,000?

7. A computer is purchased for $1500. It is expected to depreciate at a rate of 25% per year. When will the computer be worth $500?

8. An IT securities company is initially worth $1,000,000. The company is expected to grow financially at a rate of 12% per year. When will the company double its worth?

9. If a person takes 500 milligrams of a drug at time 0, then $y = 500(.7)^x$ gives the concentration of drug left in the bloodstream after x hours. How long until the amount of drug in the bloodstream is 200 milligrams?

10. Land was purchased for $60,000 in 1980. The land's value grew at a rate of 5% every year. What year did the land's value reach $150,000?