**Algebra 2 Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Applications of Logs Date: \_\_\_\_\_\_\_\_\_\_\_ Block: \_\_\_\_\_**

1.) $7,500 is deposited in an account that pays 5.25% annual interest compounded continuously. Approximately how many years will it take for the account to reach $10,000?

2.) A town of 5,000 people is experiencing an increase in population due to several new business openings. If the population increases at a rate of 8% per year, approximately how many years will it take for there to be 11,000 people in the town?

3.) A new SUV depreciates at a rate of 13% per year. If you paid $42,550 for the vehicle new, approximately how long will it take for the vehicle to be worth $30,000?

4.) The population of a small town started at 300 people in 2005. If 10 years later there are 1000 people living in the town, at what rate does the population grow?

5.) The value of a $100,000 house in a prime location appreciates at a rate of 5% per year. How many years will it take for the house to be worth $1 million dollars?

6.) Sarah would like to purchase a new car before she graduates from college. Her freshman year of college she deposits $5,000 into an account that pays interest compounded quarterly. If Sarah wants to purchase a car that costs $25,000, what interest rate does Sarah need on her account? (Assume that Sarah graduates from college in 4 years).