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

**Integrated 3 (Applications of Exponents and Logs)**

1. The growth of a virus can be modeled by  where  represents time (in days) and represents the number of virus organisms present at time  .

a.) How many organisms are present after 5 days?

b.) After how many days will there be 100 organisms?

2. The amount of power remaining in a satellite’s power supply can be modeled by , where  represents time (in days) and is the amount of power (in watts).

a.) How many watts will remain in the satellite after 30 days?

b.) After how many days will there be 20 watts remaining?

3. The value (in millions of dollars) of a famous painting can be modeled by  where  represents the year, with corresponding to 2000. In 2010, the same painting was sold for $20 million. Find the value of , and use this result to predict the value of the painting in 2025.

4. The population  (in thousands of people) from 1995 through 2015 can be modeled by , where  represents the year, with corresponding to 1995. According to this model, when would the population reach 1 million?