

# Practice 17 .....

**FOR USE WITH SECTION 3.4**

Suppose a bank offers interest compounded continuously. Use the formula  $A = Pe^{rt}$  to find the value of \$2000 after 12 years at each interest rate.

1. 4.5%                      2. 3.25%                      3. 8%                      4. 10.75%

Find the value of  $\left(1 + \frac{1}{n}\right)^n$  for each value of  $n$ . Round each answer to six decimal places.

5. 2                      6. 20                      7.  $20^2$                       8.  $20^3$

For each equation in Exercises 9–11, find an equivalent equation of the form  $y = ab^t$ .

9.  $y = e^{0.05t}$                       10.  $y = 25.4\left(\frac{1}{2}\right)^{t/250}$                       11.  $y = 150e^{-0.16t}$

12. 100 mg of Neptunium-236 decays radioactively according to the equation  $y = 100e^{-0.0308x}$  where  $x$  is in hours.

- a. Use a graphing calculator to graph this function. Sketch the graph.  
b. Estimate how many hours it takes for an amount of Neptunium-236 to be reduced by half.

13. The logistic function

$$y = \frac{12.2}{1 + 65e^{-0.435x}} + 14.7$$

gives an approximate model for the average fuel efficiency (in mi/gal) of cars produced in the U.S. between 1970 and 1993, where  $x$  = number of years after 1970.

- a. Use a graphing calculator to graph the function. Sketch the graph.  
b. Use the function to find the average fuel efficiency of cars produced in the U.S. in 1980 and 1985.