

# Practice 8-2

## Properties of Exponential Functions

Evaluate each expression to four decimal places.

1.  $e^2$                       2.  $e^{-2.5}$                       3.  $e^{\frac{1}{3}}$                       4.  $e^{\sqrt{2}}$

Find the amount in a continuously compounded account for the given conditions.

5. principal: \$5000  
annual interest rate: 6.9%  
time: 30 yr
6. principal: \$20,000  
annual interest rate: 3.75%  
time: 2 yr
7. Hg-197 is used in kidney scans. It has a half-life of 64.128 h. Write the exponential decay function for a 12-mg sample. Find the amount remaining after 72 h.
8. Sr-85 is used in bone scans. It has a half-life of 64.9 days. Write the exponential decay function for an 8-mg sample. Find the amount remaining after 100 days.
9. I-123 is used in thyroid scans. It has a half-life of 13.2 h. Write the exponential decay function for a 45-mg sample. Find the amount remaining after 5 h.

Without graphing, determine whether each equation represents exponential growth or exponential decay.

10.  $y = \frac{5}{4}(0.11)^x$                       11.  $A(t) = 1000(1.075)^t$                       12.  $s(t) = 2.4(0.5)^t$
13. Suppose you invest \$5000 at an annual interest of 6.9%, compounded monthly.
- a. How much will you have in the account after 10 years?
- b. Determine how much more you would have if the interest were compounded continuously.
14. How long would it take to double your principal at an annual interest rate of 7% compounded continuously?

Graph each exponential function.

15.  $y = 2^x$                       16.  $y = 2^{x+1}$                       17.  $y = -(2)^{x+1}$                       18.  $y = 5(0.12)^x$
19.  $y = 5^x$                       20.  $y = -0.1(5)^x$                       21.  $y = 5^{-x}$                       22.  $y = -0.1(5)^{-x}$
23.  $y = \left(\frac{1}{3}\right)^x$                       24.  $y = 5\left(\frac{1}{3}\right)^x$                       25.  $y = -5\left(\frac{1}{3}\right)^x$                       26.  $y = 2(2)^{x+2}$

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