

Name \_\_\_\_\_ Block \_\_\_\_\_ Date \_\_\_\_\_

## 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.  $e^{\sqrt{2}}$

$$A = Pe^{rt}$$

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

$$y = ab^x$$

initial value

$$x = \frac{\text{time}}{\text{half-life time}}$$

$$b = \frac{1}{2}$$

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.  $A = P\left(1 + \frac{r}{n}\right)^{nt}$
- How much will you have in the account after 10 years?
  - Determine how much more you would have if the interest were compounded continuously.  $A = Pe^{rt}$

14. How long would it take to double your principal at an annual interest rate of 7% compounded continuously? For example if your principal is \$500

Graph each exponential function.

(15)  $y = 2^x$  **GRAPH**

(16)  $y = 2^{x+1}$  **GRAPH**

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)  $y = -5\left(\frac{1}{3}\right)^x$  **GRAPH**

(26)  $y = 2(2)^{x+2}$  **GRAPH**

(ex)  $y = -3^{x-2}$

Growth reflection over x-axis, shift right 2

(ex)  $y = 2\left(\frac{1}{3}\right)^{x+3} - 5$

Decay Left 3, down 5.

NO REFLECTION. Asymptote:  $y = -5$

Name:

Date:

Class:

Graphs for 8.2  
(title of worksheet)

DRAW + LABEL ASYMPTOTES  
STATE SHIFTS, REFLECTIONS. GARD!

