

Name \_\_\_\_\_

# 9-2B Lesson Master

## Questions on SPUR Objectives

See Student Edition pages 656–659 for objectives.

### PROPERTIES Objective D

1. Determine whether the equation models exponential *growth* or *decay*.

a.  $y = (0.056)^x$  \_\_\_\_\_

b.  $y = (1.01)^x$  \_\_\_\_\_

c.  $y = 2(0.999)^x$  \_\_\_\_\_

2. **True or False** When  $a$  and  $b$  are positive and  $b \neq 1$ , all exponential functions  $y = ab^x$  have the same domain. \_\_\_\_\_

In 3 and 4, an equation for a function is given. a. Give the domain of the function. b. Give the range of the function.

3.  $f(x) = 0.9^x$

4.  $f(x) = 1.5(0.08)^x$

a. \_\_\_\_\_

a. \_\_\_\_\_

b. \_\_\_\_\_

b. \_\_\_\_\_

5. Give the equations of all asymptotes of the graph defined by  $f(x) = 3(0.44)^x$ . \_\_\_\_\_

6. **Multiple Choice** The reflection image over the  $y$ -axis of an exponential-decay curve is which of the following? \_\_\_\_\_

A same exponential-decay curve

B different exponential-decay curve

C exponential-growth curve

D none of these

7. Consider the exponential function with equation  $y = ab^x$ . Give its

a.  $x$ -intercept. \_\_\_\_\_

b.  $y$ -intercept. \_\_\_\_\_

### USES Objective G

8. Suppose a new car bought in 2008 for \$14,675 depreciates 15% each year.

a. Find an equation that gives the car's value  $x$  years after 2008. \_\_\_\_\_

b. Predict the car's value in 2015. \_\_\_\_\_

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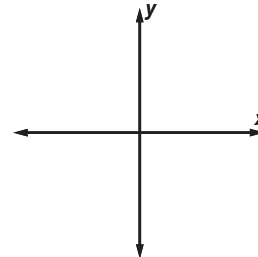
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9. Consider the equation  $L = 0.87^x$ , which gives the percent of light that will pass through  $x$  thicknesses of a certain type of tinted glass. ( $L$  = lumens per square meter)
- a. What percent of light will pass through a single thickness? \_\_\_\_\_
  - b. What percent of light will pass through four thicknesses? \_\_\_\_\_
  - c. What percent of light will pass through a half-thickness of the glass? \_\_\_\_\_
  - d. Suppose a source emits light with an intensity of 1400 lumens per square meter. What is the intensity of the light passing through six thicknesses of the glass? \_\_\_\_\_
10. Radium-226 ( $^{226}\text{Ra}$ ) has a half-life of 1620 years.
- a. Determine an equation for the percent of  $^{226}\text{Ra}$  remaining in the original sample after  $x$  half-life periods. \_\_\_\_\_
  - b. If you start with 4 g of  $^{226}\text{Ra}$ , how much will remain after 5 half-life periods? \_\_\_\_\_

**REPRESENTATIONS** Objective J

11. At the right, sketch a graph that could represent exponential decay.



In 12 and 13, consider the functions  $f(x) = 0.6^x$  and  $g(x) = \left(\frac{5}{3}\right)^x$ .

12. Fill in the table of values below.      13. Carefully graph both functions on the same set of axes below.

$x$	$f(x) = 0.6^x$	$g(x) = \left(\frac{5}{3}\right)^x$
-2		
-1		
0		
1		
2		

