

Name \_\_\_\_\_

# 2-5 Lesson Master

## Questions on SPUR Objectives

See Student Edition pages 142–145 for objectives.

### PROPERTIES Objective E

In 1 and 2, describe the end behavior of the function with the given equation.

1.  $d(x) = 26(19.83)^x$  \_\_\_\_\_

2.  $n(x) = ab^x$  when

a.  $a = \frac{1}{4}$  and  $b = 6$  \_\_\_\_\_

b.  $a < 0$  and  $0 < b < 1$  \_\_\_\_\_

3. Analyze the function  $h : x \rightarrow ae^x$ , where  $a > 0$ . \_\_\_\_\_

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### USES Objective F

4. Meghan placed \$750 into a savings account earning 3.25% interest compounded continuously. She made no other deposits or withdrawals.

a. Use the Continuous Change Model to find a formula for the amount of money in the account after  $t$  years. \_\_\_\_\_

b. What will be the balance in the account after 18 months? \_\_\_\_\_

5. If nothing restricts their reproduction, the number  $P$  of brine shrimp in a colony can be modeled by the exponential equation  $P = A(2.2)^x$ , where  $A$  is the initial population and  $x$  is the number of days.

a. If the initial population is 25, how many brine shrimp are there after 8 days? \_\_\_\_\_

b. If there are about 2100 brine shrimp after 5 days, how many were in the initial population? \_\_\_\_\_

6. *Atmospheric pressure* is the force per unit area exerted against a surface by the weight of the air above that surface at any point in Earth's atmosphere. Atmospheric pressure decreases exponentially at a rate of 12% for every 1000 m above the surface of Earth.

a. If the atmospheric pressure on Earth's surface is  $p_0$ , find a formula for the atmospheric pressure  $p(h)$  at an altitude of  $h$  thousand meters. \_\_\_\_\_

b. What percent of the atmospheric pressure at Earth's surface is exerted on a jet flying at an altitude of 8,500 meters? \_\_\_\_\_