

Name \_\_\_\_\_

**7-3 Lesson Master**

**Questions on SPUR Objectives**  
See Student Edition pages 462–465 for objectives.

**SKILLS** Objective B

In 1–3, an equation for a function is given. a. Use the definition of derivative to find a formula for the function's derivative. b. Check your answer to Part a using a theorem from Lesson 7-3.

1.  $a(x) = 7$

a. \_\_\_\_\_  
b. \_\_\_\_\_
2.  $b(t) = 2 - 3t$

a. \_\_\_\_\_  
b. \_\_\_\_\_
3.  $c(y) = y^2 + y$

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

**USES** Objectives D and E

4. Suppose an artist is pouring paint onto a canvas, and the paint is spreading in a near-circle.

a. Find a formula for the rate of change of the area of the circle as the radius increases at a constant rate. \_\_\_\_\_  
b. Your answer to Part a is what familiar formula? Explain why this makes sense.  
\_\_\_\_\_  
\_\_\_\_\_
5. Suppose a pebble is brushed off a 420-foot-high windowsill, and that the height  $h(t)$  in feet of the pebble after  $t$  seconds is given by  $h(t) = 420 - 16t^2$ .

a. Find a formula for the instantaneous velocity  $v(t)$  of the pebble after  $t$  seconds. \_\_\_\_\_  
b. Use your formula to find the instantaneous velocity of the pebble when  $t = 3$ . \_\_\_\_\_

**REPRESENTATIONS** Objective H

6. Refer to the function  $f$  graphed at the right.

a. Use the graph to estimate  $f'(x)$  when  $x = -\frac{1}{4}, \frac{3}{4}, \frac{3}{2}$ , and 2. \_\_\_\_\_  
b. Tell whether  $f'$  is increasing or decreasing on the interval.  
i.  $[-\frac{1}{4}, \frac{3}{4}]$  \_\_\_\_\_ ii.  $[\frac{3}{4}, \frac{3}{2}]$  \_\_\_\_\_  
c. Use your answers to Parts a and b to sketch a rough graph of  $f'$  on the same axes as  $f$ .

