

Name \_\_\_\_\_

# 5-5 Lesson Master

**Questions on SPUR Objectives**  
See Student Edition pages 339–343 for objectives.

## PROPERTIES Objectives G, H, and I

In 1 and 2, state the domain of the rational function with the given equation.

1.  $g(x) = \frac{x(x^2 + 3)}{x}$  \_\_\_\_\_ 2.  $h(x) = x^2 + 3$  \_\_\_\_\_

3. Write the following equation as an English sentence:  $\lim_{x \rightarrow 3^-} k(x) = 0$ . \_\_\_\_\_

In 4 and 5, let  $f(x) = \frac{2x + 1}{10 - x}$ . Find each limit.

4.  $\lim_{x \rightarrow 10^-} f(x)$  \_\_\_\_\_ 5.  $\lim_{x \rightarrow 10^+} f(x)$  \_\_\_\_\_

In 6–9, use limit notation to describe the end behavior of the function with the given equation.

6.  $p(x) = \frac{x^2 + 3x - 1}{x + 2}$  \_\_\_\_\_

7.  $q(x) = \frac{3x^4 + 2x - 4}{2x^4 + x^2}$  \_\_\_\_\_

8.  $r(x) = \frac{40x}{(x + 7)^2}$  \_\_\_\_\_

9. Consider the function  $w$  where  $w(t) = \frac{t - 2}{t^2 - 5t + 6}$ .

a. Name a value of  $t$  at which  $w$  has a removable discontinuity. \_\_\_\_\_

b. Name a value of  $t$  at which  $w$  has an essential discontinuity. \_\_\_\_\_

c. Redefine the function  $w$  so that the discontinuity in Part a is removed. \_\_\_\_\_

## REPRESENTATIONS Objective M

In 10–12, use the graph of  $y = f(x)$  at the right.

10. Use limit notation to describe the behavior of  $f$  near  $x = 1$ .

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11. Give the equation for the oblique asymptote of the graph.

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12. Name all discontinuities of  $f$ , and classify them as essential or removable.

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