

Name \_\_\_\_\_

**2-2 Lesson Master**

**Questions on SPUR Objectives**  
See Student Edition pages 142–145 for objectives.

**PROPERTIES** Objectives C and D

- 1. Consider the function  $g$  with equation  $g(y) = y^2 - 2$ . Find the range of  $g$  over each domain.
  - a. the set of all real numbers \_\_\_\_\_
  - b. the interval  $-3 < y < 4$  \_\_\_\_\_
- 2. Find the global maximum and minimum of the function with equation  $f(t) = 2t^4 + 4t + 1$  over each domain, if they exist.
  - a.  $[0, \infty)$  \_\_\_\_\_
  - b.  $(-3, 1)$  \_\_\_\_\_
- 3. Let  $p(x) = -x^3 + 6x^2 + 4$ . Find any local maximums and minimums of  $p(x)$  if the domain of  $p$  is the set of all real numbers.  
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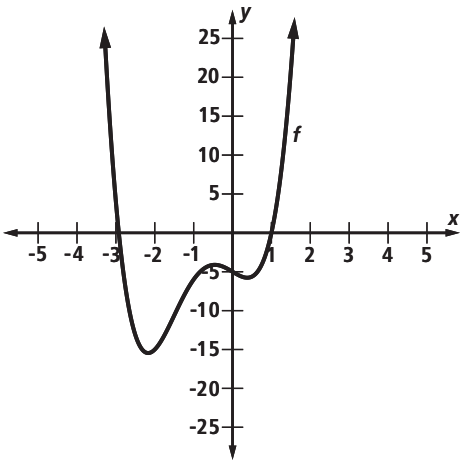
**USES** Objective G

- 4. Sandy is building a sandbox for her daughter. She has 24 feet of boards she can use to make the sides of the box. The boards are 8 inches wide, so she will be able to pour sand so that it is about 6 inches deep. She wants to maximize the amount of sand her daughter has to play with.
  - a. Let  $x$  and  $y$  be the dimensions of the sandbox in feet. Write an expression for  $y$  in terms of  $x$ . \_\_\_\_\_
  - b. Write an expression for the volume of the sand in square feet in terms of  $x$  only. \_\_\_\_\_
  - c. What should the dimensions of the sandbox be for the maximum amount of sand? \_\_\_\_\_

**REPRESENTATIONS** Objective L

In 5 and 6, use the graph of the function  $f$  at the right.

- 5. Estimate the locations and values of any local extrema of  $f$ .  
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\_\_\_\_\_
- 6. *True or False.*  $f$  has a global minimum at about  $x = 0.4$ .  
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