

Practice 12-2

Graphing Rational Functions

Describe the graph of each function.

1. $f(x) = x^2 - 4$
 2. $y = \frac{5}{x} - 1$
 3. $y = \frac{3}{x}$
 4. $g(x) = \sqrt{x + 2} - 1$
 5. $y = -8x + 2$
 6. $h(x) = 3x^2 - 4x + 1$
 7. $h(x) = |2x + 7|$
 8. $y = 0.2^x$
 9. $y = \frac{x}{4}$
10. In an electric circuit the resistance R , in ohms, increases when the current I , in amps, in the circuit decreases. The function $R = \frac{1000}{I^2}$ relates the resistance to the current.
- a. What is the resistance when the current is 4 amps?
 - b. What is the resistance when the current is 20 amps?
 - c. What is the resistance when the current is 10 amps?
11. Light intensity decreases as you move farther away from the source of light. The function $I = \frac{12,000}{d^2}$ relates the light intensity I , in lumens, to the distance d , in feet, from the light source.
- a. What is the light intensity 2 ft away from the light source?
 - b. What is the light intensity 8 ft away from the light source?
 - c. What is the light intensity 25 ft away from the light source?
12. In a cylinder of constant volume, the height increases as the radius decreases. The function $h = \frac{360}{r^2}$ relates the height of the cylinder to the radius of the cylinder.
- a. What is the height of the cylinder when the radius is 5 m?
 - b. What is the height of the cylinder when the radius is 12 m?

What value of x makes the denominator of each function equal to zero?

13. $y = \frac{5}{2x - 8}$
14. $y = \frac{12}{x}$
15. $y = \frac{5}{x + 7}$
16. $y = \frac{5x}{4x - 10}$
17. $y = \frac{7x}{x + 3}$
18. $y = \frac{3}{x - 8}$
19. $y = \frac{6}{5x - 6}$
20. $y = \frac{9x}{3x + 5}$

Graph each function. Include a dashed line for each asymptote.

21. $y = \frac{2}{x}$
22. $y = \frac{2}{x - 1}$
23. $y = \frac{1}{x + 4}$
24. $y = \frac{2}{x} + 3$
25. $y = \frac{-2}{x + 6}$
26. $y = \frac{2x}{x - 6}$
27. $y = \frac{x + 3}{x - 2}$
28. $y = \frac{3}{x - 1} - 3$