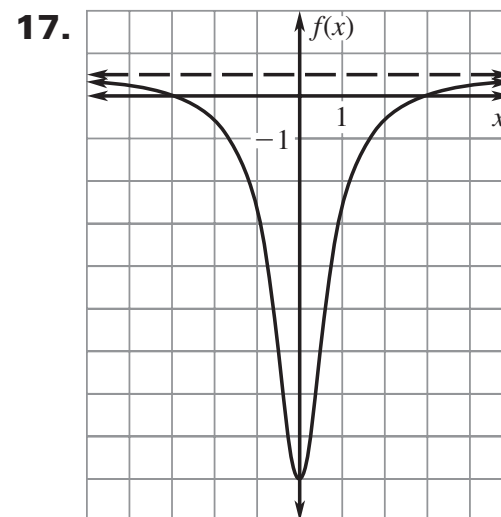
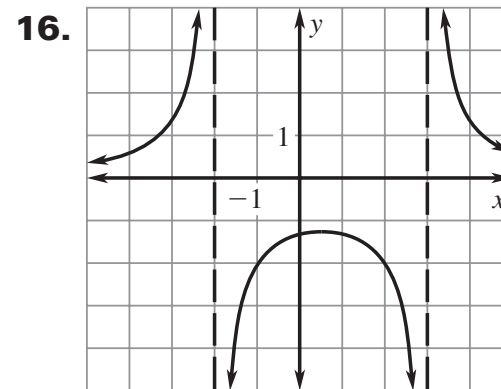
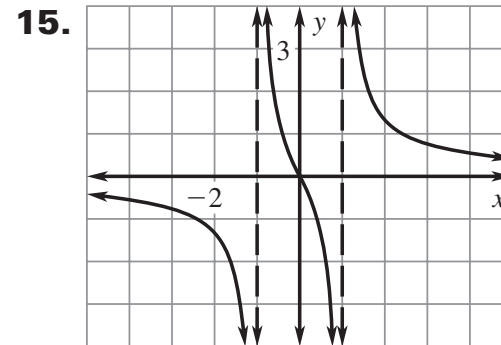


## Answers for 8.3

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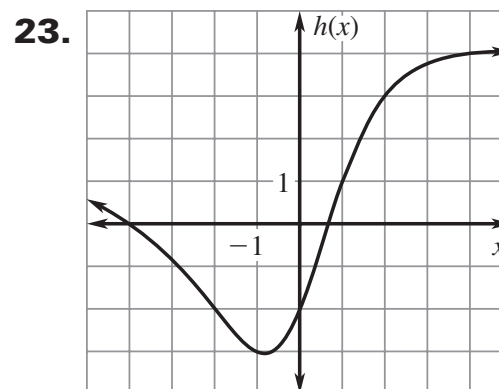
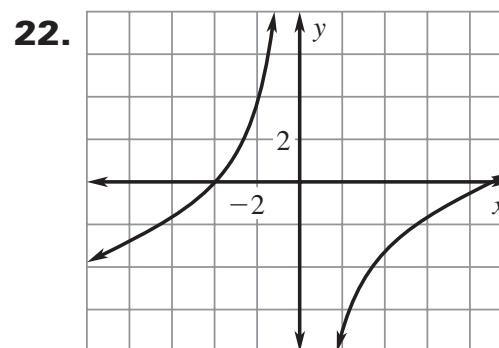
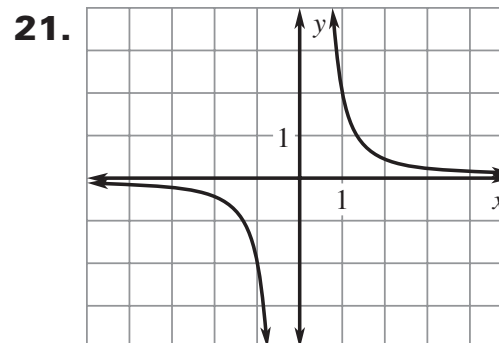
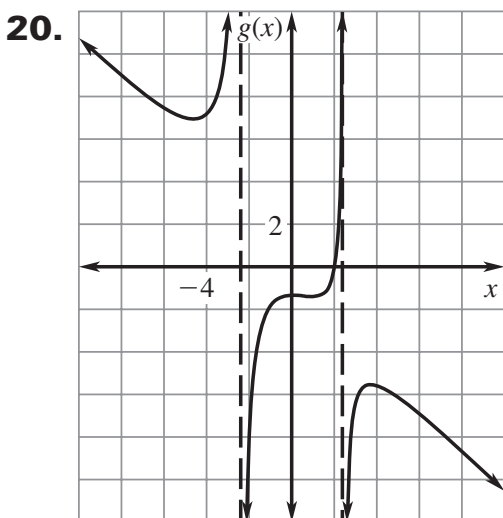
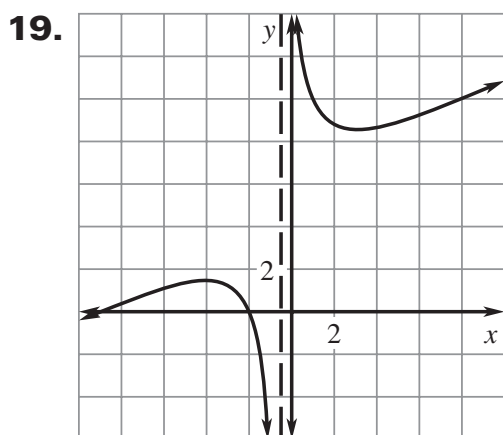
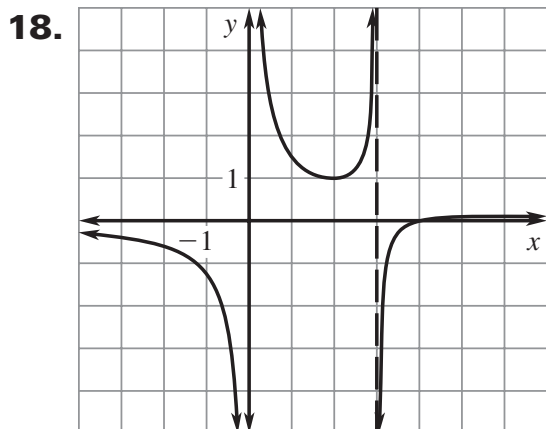
### 8.3 Skill Practice

1. horizontal asymptote
2. To find the  $x$ -intercepts, find the real zeros of the numerator  $p(x)$ , to find the vertical asymptotes, find the real zeros of the denominator  $q(x)$ .
3. C                                      4. A
5. B                                        6. A
7. none,  $x = \pm 1$
8.  $(-1, 0)$ , none
9. none,  $x = 5$  and  $x = -3$
10.  $(12, 0)$  and  $(-5, 0)$ ,  $x = -3$
11.  $(-3, 0)$ ,  $x = 0$  and  $x = -\frac{1}{3}$
12.  $(-\frac{5}{2}, 0)$  and  $(4, 0)$ , none
13. The vertical asymptote occurs at the zeros of the denominator not the numerator; the vertical asymptotes occur at the zeros of the denominator  $x^2 - 8x + 7$ . So, the vertical asymptotes are at  $x = 7$  and  $x = 1$ .
14. C



# Answers for 8.3 *continued*

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24. Sample answer:  $y = \frac{6x^4 + 5x - 1}{2x^2 - 3x + 2}$   
and  $y = \frac{3x^3 - 7}{x + 5}$

25.  $0 < y \leq 7.5$

26. all real numbers except  $0 < y \leq 3$

27. all real numbers except  
 $-4.791 < y < -0.209$

28. 2, 1    29. 12, 2    30. -6, -3

# Answers for 8.3 *continued*

For use with pages 568–572

## 8.3 Problem Solving

31. a.  $l = \frac{100}{\pi r^2}$

b.  $S = 2\pi r^2 + \frac{200}{r}$

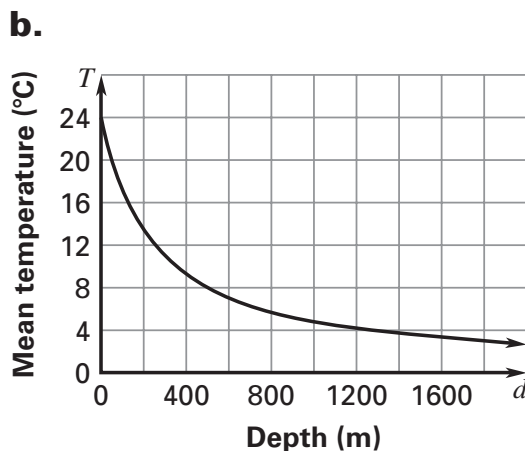
c.  $r \approx 2.515$  ft,  $l \approx 5.032$  ft

32. a.  $h = \frac{16\sqrt{3}}{3s^2}$

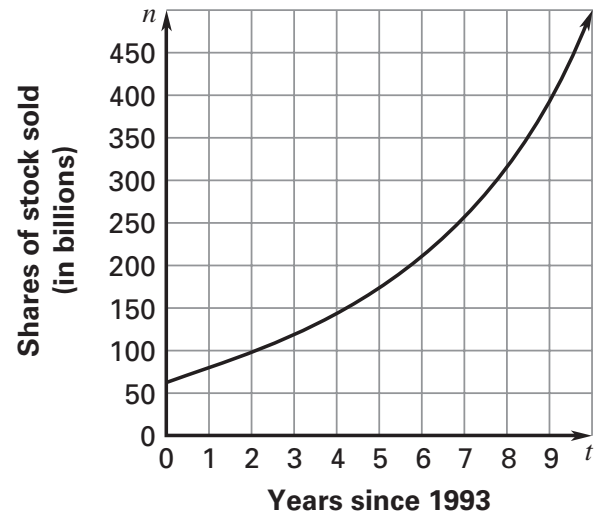
b.  $s \approx 2.201$  ft,  $h \approx 1.907$  ft

33. a.

Depth (m)	Mean Temp (C°)
1000	4.763
1050	4.580
1100	4.409
1150	4.251
1200	4.104
1250	3.967
1300	3.839



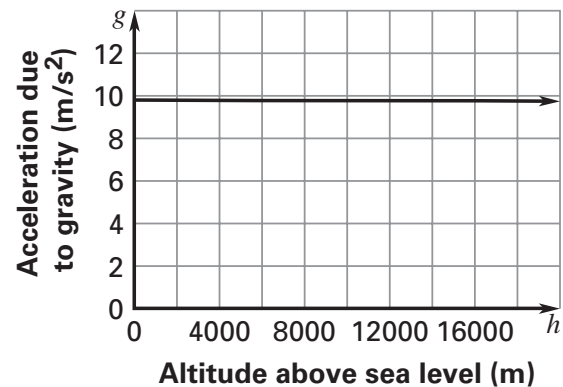
34. a.



b. *Sample answer:* As the year increases, the number of shares sold increases.

c. 1995

35. a.



b. about  $9.78 \text{ m/sec}^2$

c. about  $9.47 \text{ m/sec}^2$

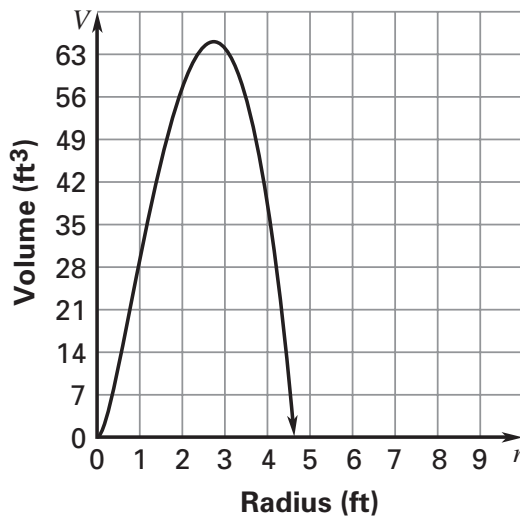
d. *Sample answer:*  $g$  decreases, but at a very small rate.

**Answers for 8.3** *continued*  
For use with pages 568–572

**36. a.**  $h = \frac{\frac{100}{\pi} - r^2 - 2r - 1}{2r + 1}$

**b.**  $V = \pi r^2 \left( \frac{\frac{100}{\pi} - r^2 - 2r - 1}{2r + 1} \right)$

**c.**



$r \approx 2.74$  ft,  $h \approx 2.75$  ft

**8.3 Mixed Review**

**37.**  $(x - 8)(x + 8)$

**38.**  $(x - 12)(x + 4)$

**39.**  $(9x + 4)(2x - 5)$

**40.**  $3(4x + 3)(x - 2)$

**41.** not factorable

**42.**  $5(x + 2)(x^2 - 2x + 4)$

**43.**  $(x - 4)(x^2 + 8)$

**44.**  $x(x + 7)(x - 5)$

**45.**  $x(x^2 - 12)(x^2 + 3)$

**46.**  $\frac{x^3}{y^3}$ ; quotient of powers property,  
negative exponent property

**47.**  $\frac{8y}{x^3}$ ; quotient of powers property,  
negative exponent property

**48.**  $\frac{x^2}{y^2}$ ; quotient of powers property,  
power of a quotient property

**49.**  $\frac{y^3}{6x^4}$ ; negative exponent property,  
power of a quotient property,  
quotient of powers property

**50.**  $\frac{y^5}{6x^3}$ ; negative exponent property,  
quotient of powers property

**51.**  $x^4y^8$ ; quotient of powers property,  
negative exponent property, power  
of a quotient property

**52.**  $25x^8y^2$ ; quotient of powers  
property, power of a quotient  
property, negative exponent  
property

**53.**  $\frac{y^3}{x^3}$ ; quotient of powers property,  
power of a quotient property

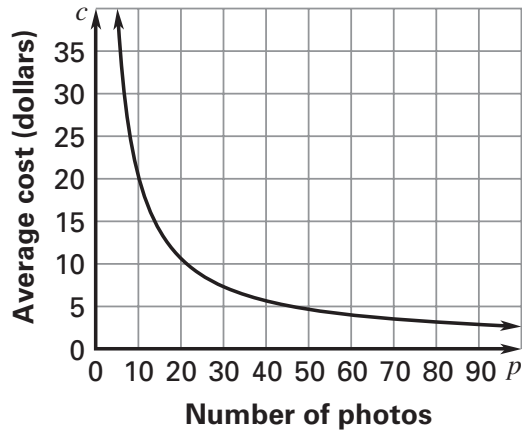
# Answers for 8.3 *continued*

For use with pages 568–572

## 8.1–8.3 Mixed Review of Problem Solving

1. a.  $c = \frac{0.6p + 200}{p}$

b.



22 photos

c. It decreases.

2. a.  $h = \frac{1663}{\pi r^2}$

b.  $S = 2\pi r^2 + \frac{3326}{r}$

c.  $r \approx 6.42$  cm,  $h \approx 12.8$  cm

3. Yes; the product of  $xy$  is close to 4000 for each set of data points.

4. *Sample answer:*  $y = \frac{2x^2 + 1}{x^2 - 5x + 6}$

5. 2;

			2
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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

6. a.  $b = \frac{w}{h^2}$

b. 1.5 m, about 20.9, 42.75 kg

c. *Sample answer:* The body mass index of the taller person is about 17% less.

7. about 0.044 watts/m<sup>2</sup>;

.	0	4	4
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<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
<input type="radio"/>	0	0	0
1	1	1	1
2	2	2	2
3	3	3	3
4	4	4	4
5	5	5	5
6	6	6	6
7	7	7	7
8	8	8	8
9	9	9	9

## Answers for 8.3 *continued*

*For use with pages 568–572*

- 8. a.** \$1200
- b.** \$500; there is a horizontal asymptote at 500.