43. Use $-4.7 \le x \le 4.7$ and $-3.1 \le y \le 3.1$. There is a vertical asymptote at $x = 1$, a hole at $x = -1$, and the x-axis is the horizontal asymptote.

45. vertical asymptotes: $x = \pm\sqrt{3}$; parabolic asymptote: $y = x^2 - 6x + 5$

47. Use $-4.7 \le x \le 4.7$ and $-10 \le y \le 10$. vertical asymptote $x = 1$; horizontal asymptote $y = 0$; x-intercepts at $x = -2$, $x = 3$; for hidden behavior $-15 \le x \le 10$, $-0.5 \le y \le 0.5$

49. Use $-30 \le x \le 30$ and $-1000 \le y \le 1000$. For hidden behavior use $-7 \le x \le 7$, $-5 \le y \le 5$.

51. $x = \dfrac{-3 \pm \sqrt{31}i}{2}$ **53.** $x = \dfrac{3 \pm \sqrt{31}i}{10}$

55. $x = \sqrt{\dfrac{2}{3}}$ or $-\sqrt{\dfrac{2}{3}}$ or i or $-i$

57. $x = -2$ or $1 + \sqrt{3}i$ or $1 - \sqrt{3}i$

59. $i, -i, 2, -1$

61. Many correct answers, including $f(x) = x^4 - 2x^3 + 2x^2$

63. a fixed orbit of one point: $\left(\dfrac{3}{5}, \dfrac{4}{5}\right)$.

65. $(x - 1)(x - 2)(x - 3)$; $(x - 1)(x - 2)(x - 3)$.

67. $(x + 1)(x - 2)(x^2 + 1)$; $(x + 1)(x - 2)(x + i)(x - i)$.

69. $(x^2 + 1)(x^2 + 1)$; $(x + i)(x - i)(x + i)(x - i)$

Chapter 4 can do calculus, page 325

1. **a.** $(-1, 4)$ **b.** $(-1, 4)$ and $(2, 4)$ **c.** $(3, 20)$

2. **a.** $(1, 0)$ **b.** $(-2, 0)$ or $(1, 0)$ **c.** $(-3, -16)$

3. **a.** approximately 3.785 cm × 6.980 cm or 8.560 cm × 1.365 cm

b. $V \approx 126.49\ \text{cm}^3$ when side length is approximately 6.324 cm and height is approximately 3.163 cm.

4. **a.** approximately 4.427 inches by 4.427 inches.

b. The largest volume occurs when $x = \dfrac{10}{3}$.

5. **a.** $r \approx 4.09977$ **b.** $r \approx 1.996$; $\approx 37.566\ \text{in}^2$

6. **a.** Approximately 206 units are produced.

b. The minimum value of about 577 dollars per unit occurs when about 269 units are produced.

7. $r \approx 1.769$, $h = \dfrac{58}{\pi r^2} \approx 5.8996$

8. The maximum area of about 220.18 square feet occurs when x is about 9.31 feet.

9. 4 sq. units

10. $5 - x^2 \approx 1.5$. The point that is closest to (0, 1) has the exact value of $\left(\sqrt{\dfrac{7}{2}}, \dfrac{3}{2}\right)$, but approximations are okay.

Chapter 5

Section 5.1, page 334

1. 12 **3.** 2 **5.** 0.09

7. 0.2 **9.** 0.125 **11.** 81

13. 16 **15.** $\dfrac{1}{64}$ **17.** $12^5\left(\sqrt[3]{12}\right)$

19. 11^{14} **21.** $(0.4)^6$ **23.** $16\sqrt{3}$

25. -8 **27.** $\dfrac{\sqrt{3}}{21}$ **29.** $-\dfrac{3}{4}$

31. $2\sqrt{5}$ **33.** 7 **35.** $22 - 8\sqrt{5}$

37. $15\sqrt{5}$ **39.** 1 **41.** $4\dfrac{a^4}{b}$

43. $\dfrac{d^5}{2\sqrt{c}}$ **45.** $(4x + 2y)^2$ **47.** $x^{\frac{9}{2}}$

49. $c^{\frac{42}{5}}d^{\frac{10}{3}}$ **51.** $\dfrac{a^{\frac{1}{2}}}{49b^{\frac{5}{2}}}$ **53.** $\dfrac{2^{\frac{9}{2}}a^{\frac{12}{5}}}{3^4b^4}$

55. a^x **57.** $(a^2 + b^2)^{\frac{1}{3}}$ **59.** $a^{\frac{3}{16}}$

61. $4t^{\frac{27}{10}}$ **63.** $\dfrac{1}{x^{\frac{1}{5}}y^{\frac{2}{5}}}$ **65.** 1

67. $x^{\frac{7}{6}} - x^{\frac{11}{6}}$ **69.** $x - y$

71. $x + y - (x + y)^{\frac{3}{2}}$ **73.** $\dfrac{3\sqrt{2}}{4}$

75. $\dfrac{3\sqrt{3} - 3}{4}$ **77.** $\dfrac{2\sqrt{x} - 4}{x - 4}$

79. $\left(x^{\frac{1}{3}} + 3\right)\left(x^{\frac{1}{3}} - 2\right)$ **81.** $\left(x^{\frac{1}{2}} + 3\right)\left(x^{\frac{1}{2}} + 1\right)$

83. $\left(x^{\frac{2}{5}} + 9\right)\left(x^{\frac{1}{5}} + 3\right)\left(x^{\frac{1}{5}} - 3\right)$

85. $\dfrac{1}{\sqrt{x + h + 1} + \sqrt{x + 1}}$

87. $\dfrac{2x + h}{\sqrt{(x + h)^2 + 1} + \sqrt{x^2 + 1}}$

89. **a.** The square (or any even power) of a real number is never negative. Graphically these equations lie strictly above or on the x-axis.

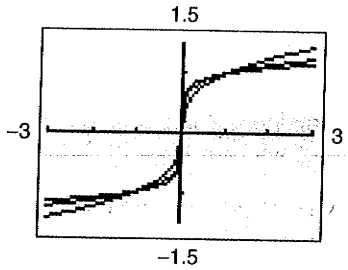
b. $\sqrt[3]{-8} = -2$, whereas $\sqrt[6]{(-8)^2} = 2$

91. $\sqrt[n]{\sqrt[m]{c}} = \sqrt[nm]{c}$; $\sqrt[m]{cd} = \sqrt[m]{c}\sqrt[m]{d}$; $\sqrt[m]{\dfrac{c}{d}} = \dfrac{\sqrt[m]{c}}{\sqrt[m]{d}}$

93. When n is an odd positive integer, if $a < b$, $a^n < b^n$. Therefore, $f(x) = x^n$ is an increasing function and thus is one-to-one. Therefore, $f(x) = x^n$ has an inverse if n is an odd positive integer. The inverse is $g(x) = \sqrt[n]{x}$.

95. about 19° F **97.** 49 mph

99.



a. $x^{\frac{1}{3}} < x^{\frac{1}{5}} < x^{\frac{1}{7}}$ **b.** $x^{\frac{1}{7}} < x^{\frac{1}{5}} < x^{\frac{1}{3}}$
c. $x^{\frac{1}{3}} < x^{\frac{1}{5}} < x^{\frac{1}{7}}$ **d.** $x^{\frac{1}{7}} < x^{\frac{1}{5}} < x^{\frac{1}{3}}$

101. a. g is the graph of f moved 3 units left
b. h is the graph of f moved 2 units down
c. k is the graph of f moved 3 units left, then 2 units down.

Section 5.2, page 343

1. Shift the graph of h vertically 5 units downward.

3. Stretch the graph of h vertically by a factor of 3.

5. Shift the graph of h horizontally 2 units to the left, then vertically 5 units downward.

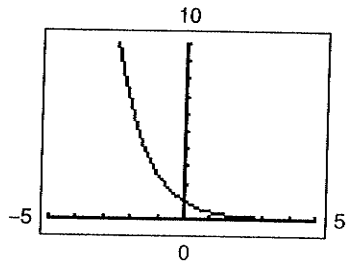
7. Shift the graph of h vertically 4 units upward.

9. Compress the graph of h vertically by a factor of $\frac{1}{4}$.

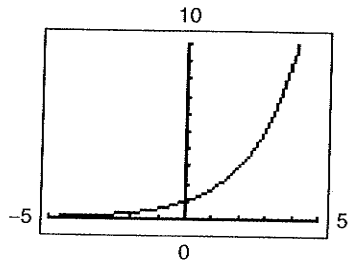
11. Reflect the graph of h across the y-axis, then shift horizontally 2 units to the right.

13. Reflect the graph of h across the y-axis, stretch horizontally by a factor of $\frac{1}{0.15} = 6\frac{2}{3}$, then stretch vertically by a factor of 4.

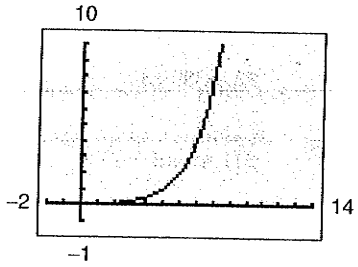
15. $f(x) = \left(\frac{5}{2}\right)^{-x}$



17. $g(x) = 3^{\frac{1}{2}}$



19. $g(x) = 2^{x-5}$



21. $f(x)$: B; $g(x)$: C; $h(x)$: A; $k(x)$: D

23. $-3 \le x \le 3$ and $0 \le y \le 1$

25. $-4 \le x \le 4$ and $-10 \le y \le 10$

27. $-4 \le x \le 4$ and $0 \le y \le 1$

29. $-5 \le x \le 20$ and $0 \le y \le 10$

31. Neither **33.** Odd

35. When x is large, $e^{-x} \approx 0$, so $e^x + e^{-x} \approx e^x + 0 = e^x$.

37. -4 **39.** $\frac{(e^{-1} - e^{1}) - (e^{-3} - e^{3})}{2} \approx 8.84$

41. $\frac{5^{(x+h)^2} - 5^{x^2}}{h}$ **43.** $\frac{(e^{x+h} - e^{-x-h}) - (e^{x} - e^{-x})}{h}$

45. The x-axis is a horizontal asymptote; local maximum at (1.44,0.53).

47. No asymptotes; local minimum at (3, 0.0078).

49. No asymptotes; no extrema.

51. a. About 520 in 15 days; about 1559 in 25 days
b. in 29.3 days

53. a. 1980: 74.06; 2000: 76.34
b. 1930

55. a. 100,000 now; 83,527 in 2 months; 58,275 in 6 months
b. No. The graph continues to decrease toward zero.

57. a. The current population is 10, and in 5 years it will be about 149.
b. After about 9.55 years.

59. a. Not entirely
b. The graph of $f_8(x)$ appears to coincide with the graph of $g(x)$ on most calculator screens; when $-2.4 \le x \le 2.4$, the maximum error is at most 0.01.
c. Not at the right side of the viewing window; $f_{12}(x)$

Section 5.3, page 353

1. Annually: \$1469.33; quarterly: \$1485.95; monthly: \$1489.85; weekly: \$1491.37

3. \$585.83 **5.** \$610.40 **7.** \$639.76

9. \$563.75 **11.** \$582.02

13. About \$3325.29 **15.** About \$3359.59

17. About \$6351.16 **19.** About \$568.59

21. Fund C **23.** \$385.18

25. About \$1,162,003.14 **27.** \$4000

29. About 5.00% **31.** About 5.92%

33. a. About 9 years; about 9 years; about 9 years
b. Doubling time is not dependent on the amount invested, but on the rate at which it is invested.

35. About 9.9 years

37. a. About 12.6%
b. 12.6%; about 12.7%; about 12.7%

39. a. $f(x) = 6(3^x)$ or $f(x) = 18(3^{x-1})$
b. 3 **c.** No; yes

41. a. $g(x) = 100.4(1.014)^x$ **b.** 115.38 million

43. a. $E(x) = 5550(1.0368)^x$
b. \$7966 **c.** In the sixth year

45. About 256; about 654

47. a. 6.705 **b.** 11.036 **c.** 16.242

49. a. $f(x) = (0.97)^x$ **b.** \$0.86; \$0.74
c. About 75 years

51. a. $f(t) = 20\left(0.5^{\frac{t}{140}}\right)$
b. About 11.892 mg; about 3.299 mg
c. About 325 days

53. About 5566 years old

Section 5.4, page 361

1. 4 **3.** -2.5 **5.** $10^3 = 1000$

7. $10^{2.8751} = 750$ **9.** $e^{1.0986} = 3$ **11.** $e^{-4.6052} = 0.01$

13. $e^{z+w} = x^2 + 2y$ **15.** $\log 0.01 = -2$

17. $\log 3 = 0.4771$ **19.** $\ln 25.79 = 3.25$

21. $\ln 5.5527 = \frac{12}{7}$ **23.** $\ln w = \frac{2}{r}$

25. $\sqrt{43}$ **27.** 15 **29.** $\frac{1}{2}$ **31.** 931

33. $x + y$ **35.** x^2 **37.** $(-1, \infty)$ **39.** $(-\infty, 0)$

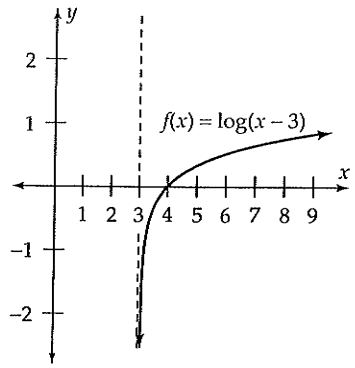
41. They are exactly the same.

43. Stretch the graph of g away from the x-axis by a factor of 2. domain: all positive reals; range: all reals

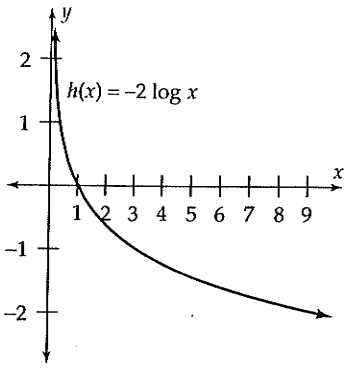
45. Shift the graph of g horizontally 4 units to the right. domain: all reals > 4; range: all reals

47. Shift the graph of g horizontally 3 units to the left, then shift it vertically 4 units downward. domain: all reals > -3; range: all reals

49.



51.



53. $0 \le x \le 9.4$ and $-6 \le y \le 6$ (vertical asymptote at $x = 1$)

55. $-10 \le x \le 10$ and $-3 \le y \le 3$

57. $0 \le x \le 20$ and $-6 \le y \le 3$

59. 0.5493 **61.** -0.2386

63. a. $\frac{\ln(3 + h) - \ln 3}{h}$ **b.** $h \approx 2.2$

65. a. About: 17.67, 11.90, 9.01, 6.12, 4.19, 3.22, 2.25
b. The rule of thumb is that the number of years it takes for your money to double at interest rate r% is 72 divided by r.

67. a. 77 **b.** 66; 59

69. a. 9.9 days **b.** About 6986

71. $n = 30$ gives an approximation with a maximum error of 0.00001 when $-0.7 \le x \le 0.7$.

Section 5.5, page 369

1. 103 **3.** About -3.63 **5.** About 0.9030

7. About -0.1461 **9.** About -0.2219

11. $\ln(x^2y^3)$ **13.** $\log(x - 3)$

15. $\ln(x^{-7})$ **17.** $3\ln(e - 1)$ **19.** $\log(20xy)$

21. $2u + 5v$ **23.** $\frac{1}{2}u + 2v$ **25.** $\frac{2}{3}u + \frac{1}{6}v$

27. a. For all $x > 0$
b. According to the fourth property of natural logarithms on page 364, $e^{\ln x} = x$ for every $x > 0$.

29. False; the right side is not defined when $x < 0$, but the left side is.

31. True by the Power Law

33. False; the graph of the left side differs from the graph of the right side.

35. Answers may vary: $\frac{\log 3}{\log 2} = 1.585$ and $\log\left(\frac{3}{2}\right) = 0.1761$ thus $\frac{\log 3}{\log 2} \neq \log\left(\frac{3}{2}\right)$

37. $b = e$ **39.** A = 3, B = 2 **41.** 2

43. Approximately 2.54 **45.** 20 decibels

47. Approximately 66 decibels **49.** 100 times

51. a. 1.2553 **b.** 3.9518 **c.** $\log x = \frac{\ln x}{\ln 10}$

Section 5.5.A, page 376

1. $\log 0.01 = -2$ **3.** $\log \sqrt[3]{10} = \frac{1}{3}$

5. $\log r = 7k$ **7.** $\log_7 5{,}764{,}801 = 8$

9. $\log_3\left(\frac{1}{9}\right) = -2$ **11.** $10^4 = 10{,}000$

13. $10^{2.8751} \approx 750$ **15.** $5^3 = 125$ **17.** $2^{-2} = \frac{1}{4}$

19. $10^{z+w} = x^2 + 2y$ **21.** $\sqrt{43}$ **23.** $\sqrt{x^2 + y^2}$

25. $\frac{1}{2}$ **27.** 6

29.

x	0	1	2	4
$f(x) = \log_4 x$	Not defined	0	0.5	1

31.

x	$\frac{1}{36}$	$\frac{1}{6}$	1	216
$h(x) = \log_6 x$	−2	−1	0	3

33.

x	0	$\frac{1}{7}$	$\sqrt{7}$	49
$f(x) = 2\log_7 x$	Not defined	−2	1	4

35.

x	−2.75	−1	1	29
$h(x) = 3\log_2(x + 3)$	−6	3	6	15

37. $b = 3$ **39.** $b = 20$

41. 5 **43.** 3 **45.** 4 **47.** $\log \frac{x^2y^3}{z^6}$

49. $\log(x^2 - 3x)$ **51.** $\log_2(5c)$ **53.** $\log_4\left(\frac{1}{49c^2}\right)$

55. $\ln\left(\frac{(x+1)^2}{x+2}\right)$ **57.** $\log_2(x)$ **59.** $\ln(e^2 - 2e + 1)$

61. 3.3219 **63.** 0.8271 **65.** 1.1115 **67.** 1.6199

69. Horizontal shift of $\frac{4}{3}$ units to the right, then compress horizontally by a factor of $\frac{1}{3}$.

Domain: all real numbers $> \frac{4}{3}$

Range: all real numbers

71. Compress the graph vertically by a factor of $\frac{1}{3}$, then a horizontal translation of 1 unit to the right, then a vertical translation of 7 units upward.
Domain: all real numbers > 1
Range: all real numbers

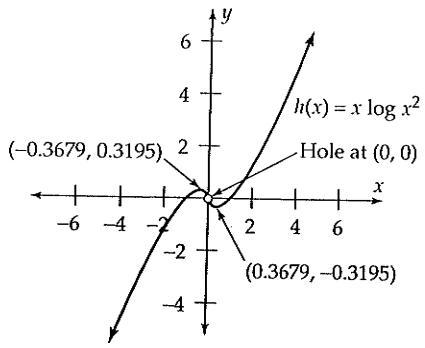
73. True **75.** True **77.** False **79.** 397^{398}

81. $\log_b u = \frac{\log_a u}{\log_a b}$ **83.** $\log_{10} u = 2\log_{100} u$

85. $\log_b x = \frac{1}{2}\log_b v + 3 = \log_b \sqrt{v} + \log_b b^3 = \log_b\left(b^3 \cdot \sqrt{v}\right)$; hence $x = b^3\sqrt{v}$.

87. $f(x) = g(x)$ only when $x \approx 0.123$, so the statement is false.

89.



Section 5.6, page 386

1. $x = 4$ **3.** $x = \frac{1}{9}$ **5.** $x = \frac{1}{2}$ or -3

7. $x = -2$ or $-\frac{1}{2}$ **9.** $x = \frac{\ln 5}{\ln 3} \approx 1.465$

11. $x = \frac{\ln 3}{\ln 1.5} \approx 2.7095$

13. $x = \frac{\ln 3 - 5\ln 5}{\ln 5 + 2\ln 3} \approx -1.825$

15. $x = \frac{\ln 2 - \ln 3}{3\ln 2 + \ln 3} \approx -0.1276$

17. $x = \frac{(\ln 5)}{2} \approx 0.805$ **19.** $x = \frac{(-\ln 3.5)}{1.4} \approx -0.895$

21. $x = \frac{2\ln\left(\frac{5}{2.1}\right)}{\ln 3} \approx 1.579$ **23.** $x = 0$ or 1

25. $x = \ln 2 \approx 0.693$ or $x = \ln 3 \approx 1.099$

27. $x = \ln 3 \approx 1.099$

29. $x = \dfrac{\ln 2}{\ln 4} = \dfrac{1}{2}$ or $x = \dfrac{\ln 3}{\ln 4} \approx 0.792$

31. $x = \ln\left(t + \sqrt{t^2 + 1}\right)$

33. If $\ln u = \ln v$, then $e^{\ln u} = e^{\ln v}$, so $u = v$

35. $x = 9$ **37.** $x = 5$ **39.** $x = 6$ **41.** $x = 3$

43. $x = \dfrac{-5 + \sqrt{37}}{2}$ **45.** $x = \dfrac{9}{(e - 1)}$ **47.** $x = 5$

49. $x = \pm\sqrt{10001}$ **51.** $x = \sqrt{\dfrac{e + 1}{e - 1}}$

53. Approximately 3689 years old

55. Approximately 950.35 years ago

57. Approximately 444,000,000 years

59. Approximately 10.413 years

61. Approximately 9.853 days

63. Approximately 6.99%

65. a. Approximately 22.5 years
b. Approximately 22.1 years

67. \$3197.05 **69.** 79.36 years

71. a. About 1.3601% **b.** In the year 2027

73. a. $k \approx 21.459$ **b.** $t \approx 0.182$

75. a. There are 20 bacteria at the beginning and 2500 three hours later.

b. $\dfrac{\ln 2}{\ln 5} \approx 0.43$

77. a. At the outbreak: 200 people; after 3 weeks: about 2717 people
b. In about 6.09 weeks

79. a. $k \approx 0.229$, $c \approx 83.3$
b. 12.43 weeks

Section 5.7, page 396

1. Cubic, exponential, logistic

3. Exponential, quadratic, cubic

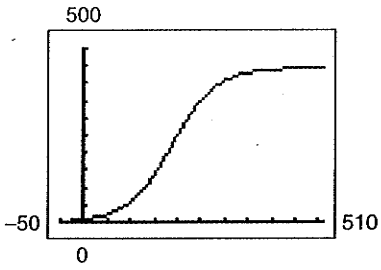
5. Exponential, logarithmic, quadratic, cubic

7. Quadratic, cubic **9.** Quadratic, cubic

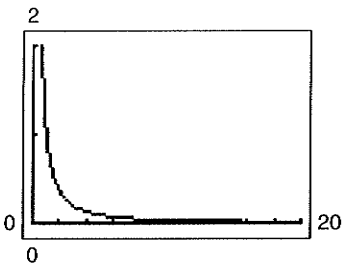
11. Ratios: 5.07, 5.06, 5.06, 5.08, 5.05; exponential is appropriate

13. a. For large values of x the term $56.33e^{-0.0216x}$ is close to zero so the quantity $(1 + 56.33e^{-0.0216x})$ is slightly larger than 1, which means $\dfrac{442.1}{1 + 56.33e^{-0.0216x}}$ is always less than (but very close to) 442.1.

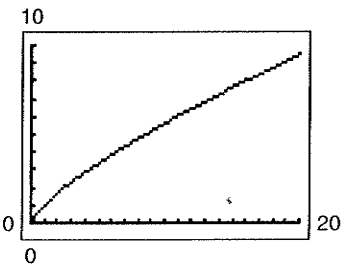
b.



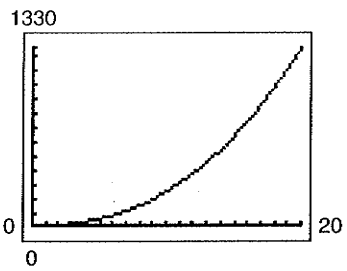
15. a.



b.



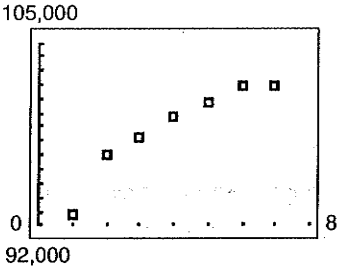
c.



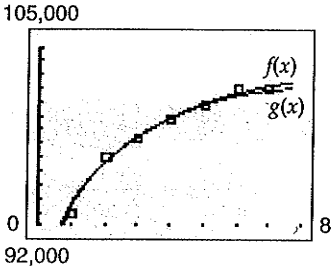
17. $\{(\ln x, \ln y)\}$ appears the most linear. Power model

19. $\{(\ln x, \ln y)\}$ and $\{(\ln x, y)\}$ are both nearly linear. Power or logarithmic model

21. a.



b. 105,000



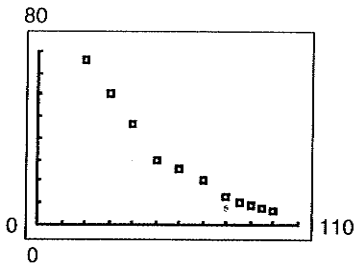
c.

X	Y1	Y2
12	104498	102426
17	106082	102509

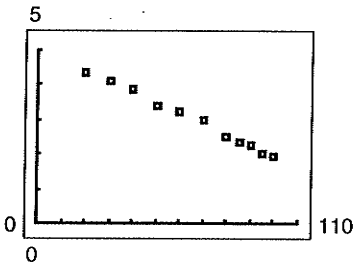
X=

d. The logarithmic model predicts continued but slowing growth while the logistic predicts a cap of about 102,520. Therefore, the logarithmic model seems the better one for the long haul.

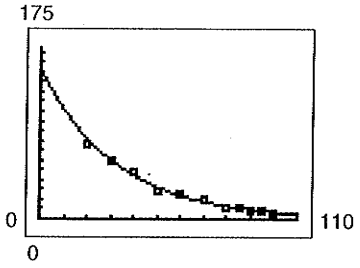
23. a.



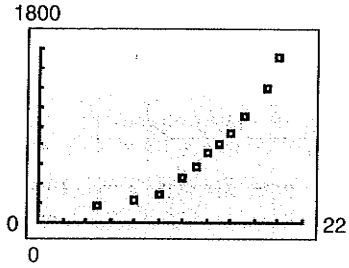
b.



c. Exponential.
$y = 152.22(0.97^x)$



25. a.



b. $y = 7.05x^2 - 78.34x + 398.73$

c. $y = \dfrac{6413.2}{1 + 107.2e^{-0.1815x}}$

d. 2325.01, 2419.97

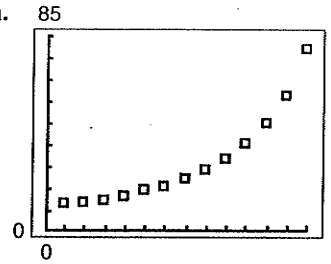
e. The quadratic model will give an ever increasing number of kids, and the rate of increase will continue to increase. Before too terribly long the number of kids home schooled by the quadratic model will exceed the number of kids in the world. The logistic model, on the other hand, gives us a maximum that can never be exceeded.

27. a. $y = 17.5945 + 13.4239 \ln x$

b. 77.4 years

c. 2012

29. a.



b. $y = 10.48(1.16^x)$

c.-d.

Year	Worldwide shipments (thousands)	Predicted number shipments (thousands)	Worldwide shipments ratio (current to previous)
1985	14.7	12.2	
1986	15.1	14.1	1.03
1987	16.7	16.4	1.11
1988	18.1	19	1.08
1989	21.3	22	1.18
1990	23.7	25.5	1.11
1991	27	29.6	1.14
1992	32.4	34.4	1.2
1993	38.9	39.9	1.20
1994	47.9	46.2	1.23
1995	60.2	53.6	1.26
1996	70.9	62.2	1.18
1997	84.3	72.2	1.19

e. An exponential model may not be appropriate.

Chapter 5 Review, page 403

1. c^2 **3.** $a^{\frac{10}{3}}b^{\frac{42}{5}}$ **5.** $u^{\frac{1}{2}} - v^{\frac{1}{2}}$ **7.** $\frac{c^2d^4}{2}$

9. $\frac{2}{\sqrt{2x + 2h + 1} + \sqrt{2x + 1}}$

11. Reflection across the x-axis, stretch vertically by a factor of 2

13. Reflection across the y-axis, stretch horizontally by a factor of 2

15. Vertical translation of 4 units upward

17. $-3 \le x \le 3$ and $0 \le y \le 2$

19. a.

62,000	33,708
63,000	35,730
64,000	37,874

b. $S = 60{,}000 + 1000(t - 1)$ $S = 30{,}000(1.06)^{t-1}$
c. Compunote is the best choice
d. Calcuplay will be paying more this time, but your total earnings will be more from Compunote

21. a. About \$1341.68 **b.** \$541.68

23. a. About \$2357.90
b. After about 32.65 years

25. $f(x) = 56{,}000(1.065)^x$

27. About 3.75 grams

29. $\ln 756 = 6.628$ **31.** $\ln(u + v) = r^2 - 1$

33. $\log 756 = 2.8785$ **35.** $e^{7.118} = 1234$

37. $e^t = rs$ **39.** Undefined

41. Reflection across the y-axis, horizontal translation of 4 units to the right; Domain: all real numbers <4; Range: all real numbers

43. Vertical stretch by a factor of 3, vertical translation of 5 units downward; Domain: all positive real numbers; Range: all real numbers

45. 3 **47.** $\frac{3}{4}$ **49.** $2 \ln x$ **51.** $\ln\left(\frac{9y}{x^2}\right)$ **53.** (c)

55. The domain consists of those values of x for which $\frac{x}{x-1}$ is positive; $(-\infty, 0) \cup (1, \infty)$

57. $d^w = uv$ **59.** 2 **61.** (c)

63. $x = \frac{3 \pm \sqrt{57}}{4}$ **65.** $x = -\frac{1}{2}$

67. $x = e^{\frac{(u-c)}{d}}$ **69.** $x = 2$

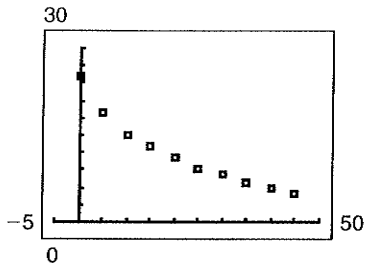
71. $x = 101$ **73.** About 1.64 mg

75. Approximately 12 years

77. \$452.89 **79.** 7.6

81. a. 11° F

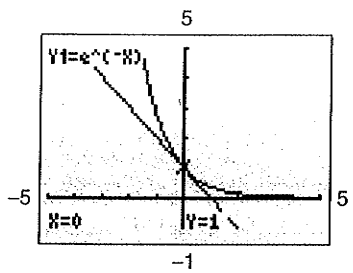
b.



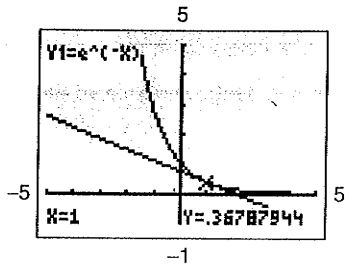
c. The points $(x, \ln(y))$ are approximately linear.
d. $y = 22.42(0.967^x)$
e. 10.27° F

Chapter 5 can do calculus, page 411

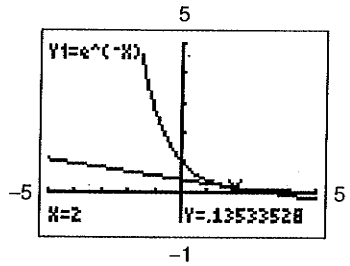
1. $y = -x + 1$;



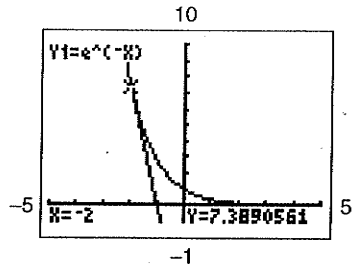
2. $y = -e^{-1}(x - 1) + e^{-1}$



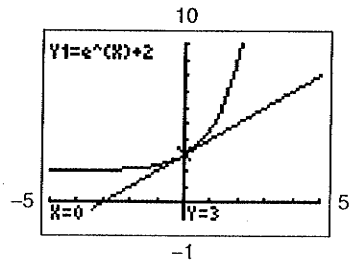
3. $y = -e^{-2}(x - 2) + e^{-2}$



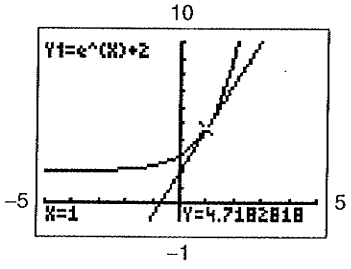
4. $y = -e^{2}(x + 2) + e^{2}$



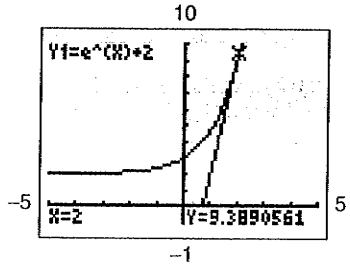
5. $y = x + 3$



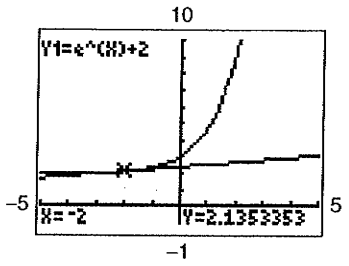
6. $y = e(x - 1) + e + 2$



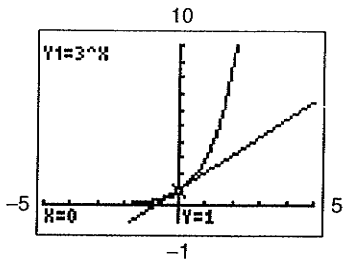
7. $y = e^{2}(x - 2) + e^{2} + 2$



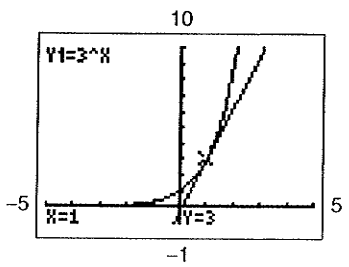
8. $y = e^{-2}(x + 2) + e^{-2} + 2$



9. $y = (\ln 3)x + 1$



10. $y = (3 \ln 3)(x - 1) + 3$



11. $y = (9 \ln 3)(x - 2) + 9$