

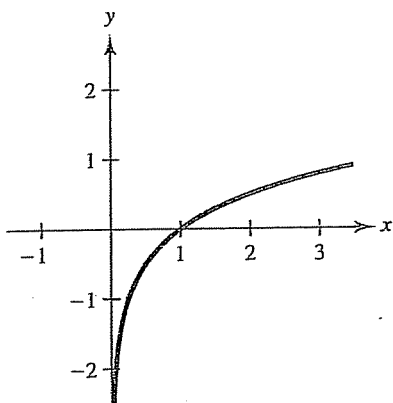
Section 5.2 (page 402)

Vocabulary Check (page 402)

1. logarithmic 2. 10 3. natural; e
 4. $a^{\log_a x} = x$ 5. $x = y$

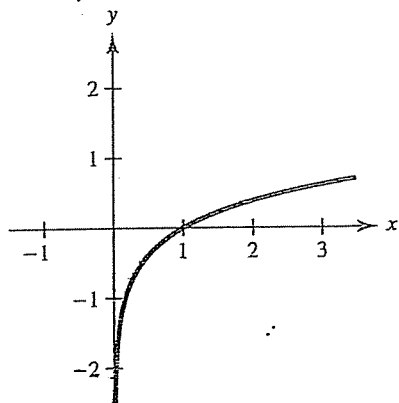
1. $4^3 = 64$ 2. $3^4 = 81$ 3. $7^{-2} = \frac{1}{49}$
 4. $10^{-3} = \frac{1}{1000}$ 5. $32^{2/5} = 4$ 6. $16^{3/4} = 8$
 7. $36^{1/2} = 6$ 8. $8^{2/3} = 4$ 9. $\log_5 125 = 3$
 10. $\log_8 64 = 2$ 11. $\log_{81} 3 = \frac{1}{4}$ 12. $\log_9 27 = \frac{3}{2}$
 13. $\log_6 \frac{1}{36} = -2$ 14. $\log_4 \frac{1}{64} = -3$ 15. $\log_7 1 = 0$
 16. $\log 0.001 = -3$ 17. 4 18. $\frac{1}{2}$ 19. 0
 20. 1 21. 2 22. -3 23. -0.097
 24. -2.699 25. 1.097 26. 1.877 27. 4
 28. 0 29. 1 30. 15

31.



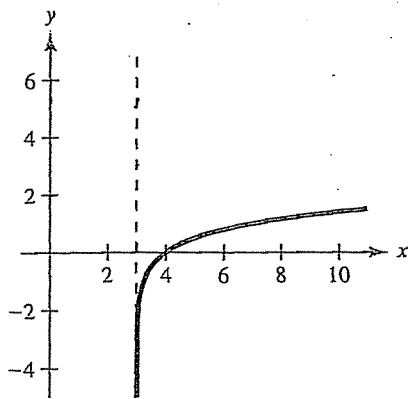
Domain: $(0, \infty)$
 x-intercept: $(1, 0)$
 Vertical asymptote: $x = 0$

32.

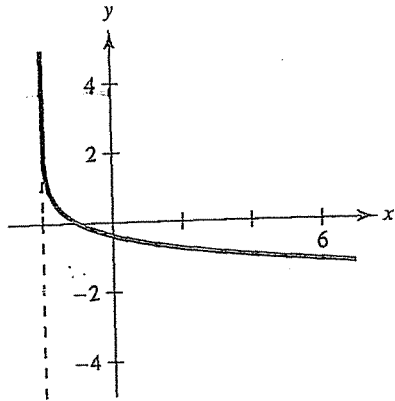


Domain: $(0, \infty)$
 x-intercept: $(1, 0)$
 Vertical asymptote: $x = 0$

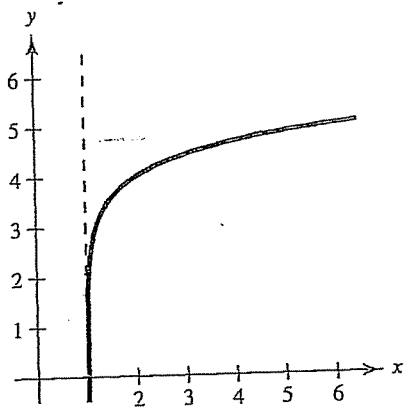
34.

Domain: $(3, \infty)$ x -intercept: $(4, 0)$ Vertical asymptote: $x = 3$

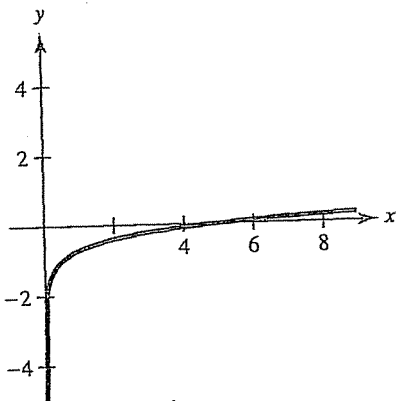
35.

Domain: $(-2, \infty)$ x -intercept: $(-1, 0)$ Vertical asymptote: $x = -2$

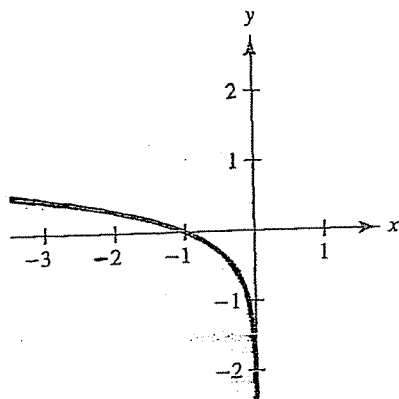
36.

Domain: $(1, \infty)$ x -intercept: $(\frac{626}{625}, 0)$ Vertical asymptote: $x = 1$

37.

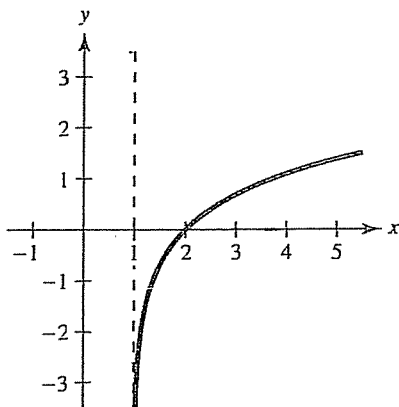
Domain: $(0, \infty)$ x -intercept: $(5, 0)$ Vertical asymptote: $x = 0$

38.

Domain: $(-\infty, 0)$ x -intercept: $(-1, 0)$ Vertical asymptote: $x = 0$

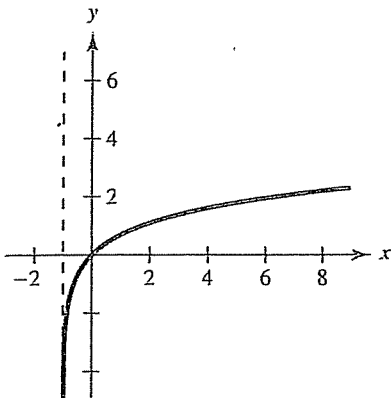
39. c 40. f 41. d
 42. e 43. b 44. a
 45. $e^{-0.693\dots} = \frac{1}{2}$ 46. $e^{-0.916\dots} = \frac{2}{5}$
 47. $e^{1.386\dots} = 4$ 48. $e^{2.302\dots} = 10$
 49. $e^{5.521\dots} = 250$ 50. $e^{6.520\dots} = 679$
 51. $e^0 = 1$ 52. $e^1 = e$ 53. $\ln 20.0855\dots = 3$
 54. $\ln 7.3890\dots = 2$ 55. $\ln 1.6487\dots = \frac{1}{2}$
 56. $\ln 1.3956\dots = \frac{1}{3}$ 57. $\ln 0.6065\dots = -0.5$
 58. $\ln 0.0165\dots = -4.1$ 59. $\ln 4 = x$
 60. $\ln 3 = 2x$ 61. 2.913
 62. -3.418 63. -0.575
 64. 0.693 65. 3 66. -2
 67. $-\frac{2}{3}$ 68. $-\frac{5}{2}$

69.



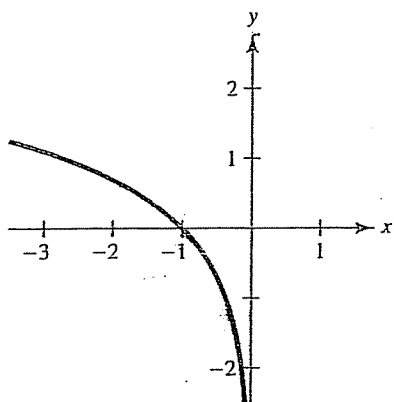
Domain: $(1, \infty)$
 x-intercept: $(2, 0)$
 Vertical asymptote: $x = 1$

70.



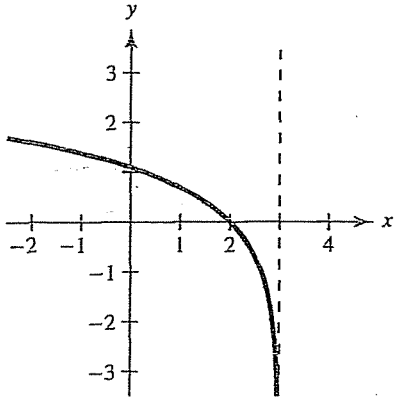
Domain: $(-1, \infty)$
 x-intercept: $(0, 0)$
 Vertical asymptote: $x = -1$

71.



Domain: $(-\infty, 0)$
 x-intercept: $(-1, 0)$
 Vertical asymptote: $x = 0$

72.

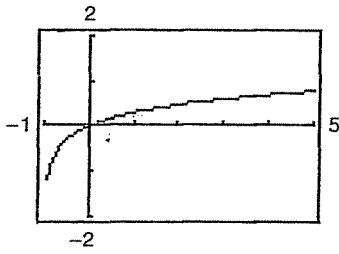


Domain: $(-\infty, 3)$

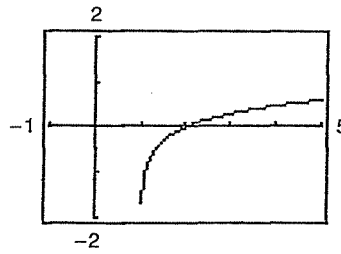
x -intercept: $(2, 0)$

Vertical asymptote: $x = 3$

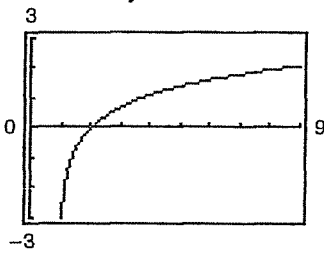
73.



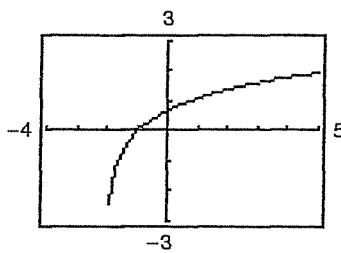
74.



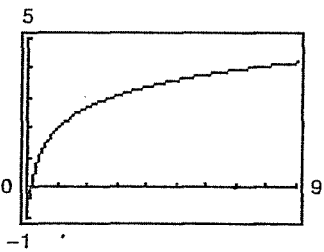
75.



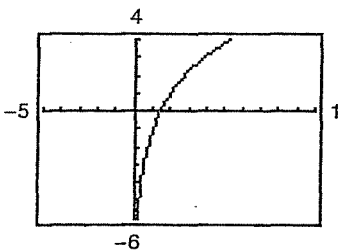
76.



77.



78.



79. $x = 3$ 80. $x = -12$ 81. $x = 7$ 82. $x = \frac{9}{5}$

83. $x = 4$ 84. $x = 6$ 85. $x = -5, 5$

86. $x = -2, 3$

87. (a) 30 years; 20 years (b) \$396,234; \$301,123.20

(c) \$246,234; \$151,123.20

(d) $x = 1000$; The monthly payment must be greater than \$1000.