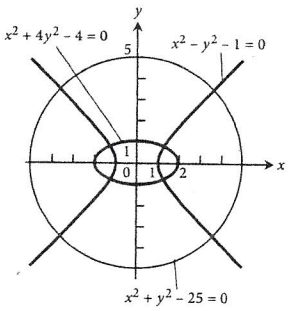
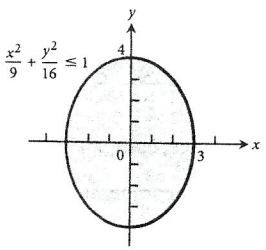
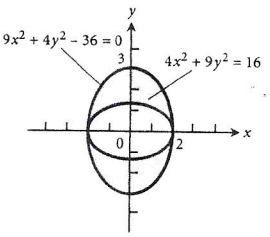
11.



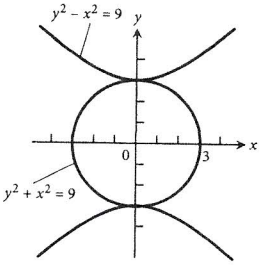
13.



15.



17.



19. $x = (a + b)\cos\theta - b\cos\left(\frac{a + b}{b}\theta\right)$

$y = (a + b)\operatorname{sen}\theta - b\operatorname{sen}\left(\frac{a + b}{b}\theta\right)$

21. (a) $r = e^{2\theta}$ (b) $\frac{\sqrt{5}}{2}(e^{4\pi} - 1)$ 23. $\frac{32\pi - 4\pi\sqrt{2}}{5}$

25. $r = \frac{4}{1 + 2\cos\theta}$ 27. $r = \frac{2}{2 + \operatorname{sen}\theta}$ 29. (a) 120°

31. 1×10^7 milhas 33. $e = \sqrt{2/3}$ 35. Sim, uma parábola

37. (a) $r = \frac{2a}{1 + \cos\left(\theta - \frac{\pi}{4}\right)}$ (b) $r = \frac{8}{3 - \cos\theta}$

(c) $r = \frac{3}{1 + 2\operatorname{sen}\theta}$

43. $\pi/2$ 47. $\left(2, \pm\frac{\pi}{3}\right), \frac{\pi}{2}$ 51. $\pi/2$ 53. $\pi/4$

CAPÍTULO 11

Seção 11.1

1. $a_1 = 0, a_2 = -1/4, a_3 = -2/9, a_4 = -3/16$

3. $a_1 = 1, a_2 = -1/3, a_3 = 1/5, a_4 = -1/7$

5. $a_1 = 1/2, a_2 = 1/2, a_3 = 1/2, a_4 = 1/2$

7. $1, \frac{3}{2}, \frac{7}{4}, \frac{15}{8}, \frac{31}{16}, \frac{63}{32}, \frac{127}{64}, \frac{255}{128}, \frac{511}{256}, \frac{1.023}{512}$

9. $2, 1, -\frac{1}{2}, -\frac{1}{4}, \frac{1}{8}, \frac{1}{16}, -\frac{1}{32}, -\frac{1}{64}, \frac{1}{128}, \frac{1}{256}$

11. 1, 1, 2, 3, 5, 8, 13, 21, 34, 55 **13.** $a_n = (-1)^{n+1}, n \geq 1$

15. $a_n = (-1)^{n+1}(n)^2, n \geq 1$ **17.** $a_n = n^2 - 1, n \geq 1$

19. $a_n = 4n - 3, n \geq 1$ 21. $a_n = \frac{1 + (-1)^{n+1}}{2}, n \geq 1$

23. Converge, 2 25. Converge, −1 27. Converge, −5

29. Diverge 31. Diverge 33. Converge, 1/2

35. Converge, 0 37. Converge, $\sqrt{2}$ 39. Converge, 1

41. Converge, 0 43. Converge, 0 45. Converge, 0

47. Converge, 1 49. Converge, e^7 51. Converge, 1

53. Converge, 1 55. Diverge 57. Converge, 4

59. Converge, 0 61. Diverge 63. Converge, e^{-1}

65. Converge, $e^{2/3}$ 67. Converge, $x (x > 0)$

69. Converge, 0 71. Converge, 1 73. Converge, 1/2

75. Converge, $\pi/2$ 77. Converge, 0 79. Converge, 0

81. Converge, 1/2 83. Converge, 0 85. $x_n = 2^{n-2}$

87. (a) $f(x) = x^2 - 2$, 1,414213562 $\approx \sqrt{2}$

(b) $f(x) = \operatorname{tg}(x) - 1$, 0,7853981635 $\approx \pi/4$

(c) $f(x) = e^x$, diverge

89. (b) 1 97. Crescente, limitada

99. Decrescente, limitada

101. Converge, teorema da seqüência crescente

103. Converge, teorema da seqüência crescente

105. Diverge, definição de divergência 109. Converge

111. Converge 121. $N = 692, a_n = \sqrt[n]{0,5}, L = 1$

123. $N = 65, a_n = (0,9)^n, L = 0$ 125. (b) $\sqrt{3}$

Seção 11.2

1. $s_n = \frac{2(1 - (1/3)^n)}{1 - (1/3)}, 3$ 3. $s_n = \frac{1 - (-1/2)^n}{1 - (-1/2)}, 2/3$

5. $s_n = \frac{1}{2} - \frac{1}{n + 2}, \frac{1}{2}$ 7. $1 - \frac{1}{4} + \frac{1}{16} - \frac{1}{64} + \cdots, \frac{4}{5}$

9. $\frac{7}{4} + \frac{7}{16} + \frac{7}{64} + \cdots, \frac{7}{3}$

11. $(5 + 1) + \left(\frac{5}{2} + \frac{1}{3}\right) + \left(\frac{5}{4} + \frac{1}{9}\right) + \left(\frac{5}{8} + \frac{1}{27}\right) + \cdots, \frac{23}{2}$

13. $(1 + 1) + \left(\frac{1}{2} - \frac{1}{5}\right) + \left(\frac{1}{4} + \frac{1}{25}\right) + \left(\frac{1}{8} - \frac{1}{125}\right) + \cdots, \frac{17}{6}$

15. 1 17. 5 19. 1 21. $-\frac{1}{\ln 2}$ 23. Converge, $2 + \sqrt{2}$

25. Converge, 1 27. Diverge 29. Converge, $\frac{e^2}{e^2 - 1}$

31. Converge, 2/9 33. Converge, 3/2 35. Diverge

37. Diverge 39. Converge, $\frac{\pi}{\pi - e}$

41. $a = 1, r = -x$, converge para $1/(1 + x)$ quando $|x| < 1$

43. $a = 3, r = (x - 1)/2$, converge para $6/(3 - x)$ quando x em $(-1, 3)$

45. $|x| < \frac{1}{2}, \frac{1}{1 - 2x}$ 47. $-2 < x < 0, \frac{1}{2 + x}$

49. $x \neq (2k + 1)\frac{\pi}{2}$, k inteiro; $\frac{1}{1 - \operatorname{sen} x}$