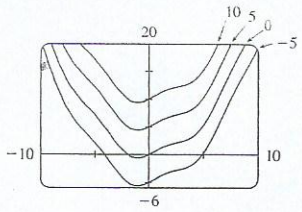
9. $2t - t^2 + \frac{1}{3}t^3 - \frac{1}{4}t^4 + C$ **11.** $\frac{1}{3}x^3 - 4\sqrt{x} + C$

13. $-\cos x + \cosh x + C$ **15.** $\frac{1}{2}\theta^2 + \operatorname{cossec}\theta + C$

17. $\operatorname{tg}\alpha + C$

19. $\operatorname{sen} x + \frac{1}{4}x^2 + C$



21. 18 **23.** $-2 + 1/e$ **25.** 52

27. $\frac{256}{15}$ **29.** $-\frac{63}{4}$ **31.** $\frac{55}{63}$ **33.** $2\sqrt{5}$ **35.** 8

37. $1 + \pi/4$ **39.** $\frac{256}{5}$ **41.** $\pi/6$ **43.** $-3{,}5$

45. 0, 1,32; 0,84 **47.** $\frac{4}{3}$

49. O aumento no peso da criança (em quilogramas) entre as idades de 5 e 10 anos

51. Número de litros de petróleo que vazou nas primeiras 2 horas

53. Aumento na receita quando a produção aumenta de 1 000 para 5 000 unidades

55. Newton-metros (ou joules) **57.** (a) $-\frac{3}{2}$ m (b) $\frac{41}{6}$ m

59. (a) $v(t) = \frac{1}{2}t^2 + 4t + 5$ m/s (b) $416\frac{2}{3}$ m

61. $46\frac{2}{3}$ kg **63.** 2,2 km **65.** \$58 000

67. (b) No máximo 40%; $\frac{5}{36}$

EXERCÍCIOS 5.5 ■ PÁGINA 381

1. $\frac{1}{3}\operatorname{sen} 3x + C$ **3.** $\frac{2}{9}(x^3 + 1)^{3/2} + C$ **5.** $-1/(1 + 2x)^2 + C$

7. $-\frac{1}{2}\cos(x^2) + C$ **9.** $\frac{1}{63}(3x - 2)^{21} + C$

11. $\frac{1}{3}(2x + x^2)^{3/2} + C$ **13.** $-\frac{1}{3}\ln|5 - 3x| + C$

15. $-(1/\pi)\cos \pi t + C$ **17.** $\frac{2}{3}\sqrt{3ax + bx^3} + C$

19. $\frac{1}{3}(\ln x)^3 + C$ **21.** $2\operatorname{sen}\sqrt{t} + C$

23. $\frac{1}{7}\operatorname{sen}^7\theta + C$ **25.** $\frac{2}{3}(1 + e^x)^{3/2} + C$

27. $\frac{1}{2}(1 + z^3)^{2/3} + C$ **29.** $e^{\operatorname{tg} x} + C$

31. $-1/(\operatorname{sen} x) + C$ **33.** $-\frac{2}{3}(\operatorname{cotg} x)^{3/2} + C$

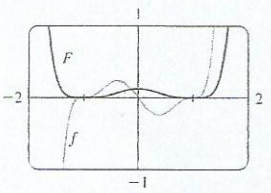
35. $-\ln(1 + \cos^2 x) + C$ **37.** $\ln|\operatorname{sen} x| + C$

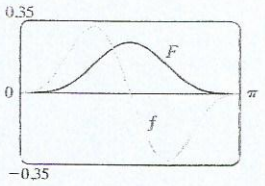
39. $\frac{1}{3}\sec^3 x + C$ **41.** $\ln|\operatorname{sen}^{-1} x| + C$

43. $\operatorname{tg}^{-1} x + \frac{1}{2}\ln(1 + x^2) + C$

45. $\frac{4}{7}(x + 2)^{7/4} - \frac{8}{3}(x + 2)^{3/4} + C$

47. $\frac{1}{8}(x^2 - 1)^4 + C$ **49.** $\frac{1}{4}\operatorname{sen}^4 x + C$





51. 0 **53.** $\frac{182}{9}$ **55.** 4

57. 0 **59.** $e - \sqrt{e}$ **61.** 1 **63.** $\frac{1}{3}(2\sqrt{2} - 1)a^3$

65. $\frac{16}{15}$ **67.** 2 **69.** $\ln(e + 1)$ **71.** $\sqrt{3} - \frac{1}{3}$

73. 6π **75.** Todas as três áreas são iguais. **77.** $\approx 4\,512$ L

79. $\frac{5}{4\pi}\left(1 - \cos\frac{2\pi t}{5}\right)$L **81.** 5 **87.** $\pi^2/4$

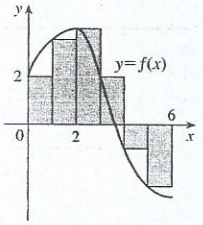
CAPÍTULO 5 REVISÃO ■ PÁGINA 384

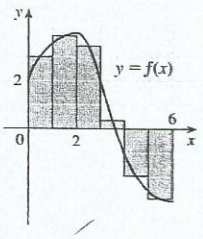
Teste Verdadeiro-Falso

1. Verdadeiro **3.** Verdadeiro **5.** Falso **7.** Verdadeiro
9. Verdadeiro **11.** Falso **13.** Falso **15.** Falso

Exercícios

1. (a) 8 (b) 5,7





3. $\frac{1}{2} + \pi/4$ **5.** 3 **7.** f é c, f' é b, $\int_0^x f(t)\,dt$ é a

9. 37 **11.** $\frac{9}{10}$ **13.** -76 **15.** $\frac{21}{4}$ **17.** Não existe

19. $\frac{1}{3}\operatorname{sen} 1$ **21.** 0 **23.** $-(1/x) - 2\ln|x| + x + C$

25. $\sqrt{x^2 + 4x} + C$ **27.** $[1/(2\pi)]\operatorname{sen}^2 \pi t + C$

29. $2e^{\sqrt{x}} + C$ **31.** $\frac{1}{2}[\ln(\cos x)]^2 + C$

33. $\frac{1}{4}\ln(1 + x^4) + C$ **35.** $\ln|1 + \sec\theta| + C$ **37.** $\frac{23}{3}$

39. $2\sqrt{1 + \operatorname{sen} x} + C$ **41.** $\frac{64}{5}$ **43.** $F'(x) = x^2/(1 + x^3)$

45. $g'(x) = 4x^3\cos(x^8)$ **47.** $y' = (2e^x - e^{\sqrt{x}})/(2x)$

49. $4 \leq \int_1^3 \sqrt{x^2 + 3}\,dx \leq 4\sqrt{3}$ **55.** 0,280981

57. Número de barris de petróleo consumidos de 1 de janeiro de 2000 até 1 de janeiro de 2008

59. 72 400 **61.** 3 **63.** $c \approx 1{,}62$

65. $f(x) = e^{2x}(1 + 2x)/(1 - e^{-x})$ **71.** $\frac{2}{3}$

PROBLEMAS QUENTES ■ PÁGINA 388

1. $\pi/2$ **3.** $f(x) = \frac{1}{2}x$ **5.** -1 **7.** e^{-2} **9.** $[-1, 2]$

11. (a) $\frac{1}{2}(n - 1)n$ (b) $\frac{1}{2}|b|(2b - |b| - 1) - \frac{1}{2}|a|(2a - |a| - 1)$

17. $2(\sqrt{2} - 1)$