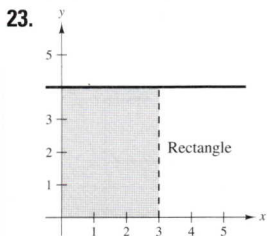


Section 4.3 (page 278)

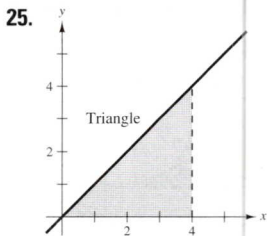
1. $2\sqrt{3} \approx 3.464$ 3. 32 5. 0 7. $\frac{10}{3}$ 9. $\int_{-1}^5 (3x + 10) dx$

11. $\int_0^3 \sqrt{x^2 + 4} dx$ 13. $\int_0^4 5 dx$ 15. $\int_{-4}^4 (4 - |x|) dx$

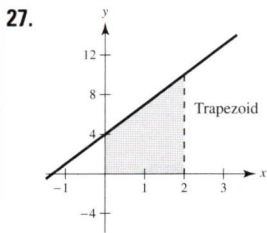
17. $\int_{-5}^5 (25 - x^2) dx$ 19. $\int_0^{\pi/2} \cos x dx$ 21. $\int_0^2 y^3 dy$



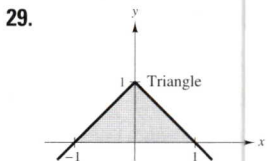
$A = 12$



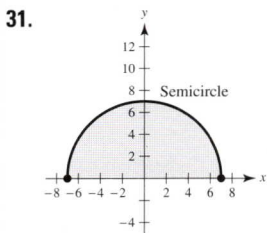
$A = 8$



$A = 14$



$A = 1$



$A = 49\pi/2$

33. -6 35. 48 37. -12

39. 16 41. (a) 13 (b) -10 (c) 0 (d) 30

43. (a) 8 (b) -12 (c) -4 (d) 30 45. -48, 88

47. (a) $-\pi$ (b) 4 (c) $-(1 + 2\pi)$ (d) $3 - 2\pi$
 (e) $5 + 2\pi$ (f) $23 - 2\pi$

49. (a) 14 (b) 4 (c) 8 (d) 0 51. 81

53. $\sum_{i=1}^n f(x_i) \Delta x > \int_1^5 f(x) dx$

55. No. There is a discontinuity at $x = 4$. 57. a 59. d

61.

n	4	8	12	16	20
$L(n)$	3.6830	3.9956	4.0707	4.1016	4.1177
$M(n)$	4.3082	4.2076	4.1838	4.1740	4.1690
$R(n)$	3.6830	3.9956	4.0707	4.1016	4.1177

63.

n	4	8	12	16	20
$L(n)$	0.5890	0.6872	0.7199	0.7363	0.7461
$M(n)$	0.7854	0.7854	0.7854	0.7854	0.7854
$R(n)$	0.9817	0.8836	0.8508	0.8345	0.8247

65. True 67. True

69. False: $\int_0^2 (-x) dx = -2$ 71. 272 73. Proof

75. No. No matter how small the subintervals, the number of both rational and irrational numbers within each subinterval is infinite and $f(c_i) = 0$ or $f(c_i) = 1$.

77. $a = -1$ and $b = 1$ maximize the integral. 79. $\frac{1}{3}$