

Section 5.2

34. (a) 4 (b) -2π (c) $\frac{9}{2} - 2\pi$

52. $F(0)$, $F(1)$, $F(3)$, and $F(4)$ are negative. $F(2) = 0$ so $F(2)$ is the largest.

Section 5.3

2. (a) $g(0) = 0$, $g(1) = \frac{1}{2}$, $g(2) = 0$, $g(3) = -\frac{1}{2}$, $g(4) = 0$, $g(5) = \frac{3}{2}$, $g(6) = 4$

(c) g has a maximum value at $x = 7$ and maximum value is $g(7) \approx 6.2$.

g has a minimum value at $x = 3$ and minimum value is $g(3) = -\frac{1}{2}$.

3. (c) g has a maximum value at $x = 3$ and maximum value is $g(3) = 7$.

g has a minimum value at $x = 0$ and minimum value is $g(0) = 0$.

14. $h'(x) = \frac{\sqrt{x}}{2(x^2 + 1)}$

66. Increasing on $(-2, 0) \cup (2, \infty)$, decreasing on $(-\infty, -2) \cup (0, 2)$,

concave down on $(-1, 1)$ and concave up on $(-\infty, -1) \cup (1, \infty)$.

Inflection points are at $x = -1$, $x = 1$.

73. (a) Local maxima at $x = 1$ and $x = 5$. Local minima at $x = 3$ and $x = 7$.

(b) Absolute maxima at $x = 9$. Absolute minima at $x = 7$.

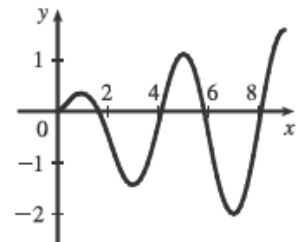
(c) Concave down on $(1/2, 2) \cup (4, 6) \cup (8, 9)$.

Concave up on $(0, 1/2) \cup (2, 4) \cup (6, 8)$.

Points of inflection are at $x = 1/2$, 2, 4, 6, and 8.

g is decreasing on $(1, 3) \cup (5, 7)$ and increasing on $(0, 1) \cup (3, 5) \cup (7, 9)$

(d)



Section 5.4

36. $\sqrt{2} - 1$ 60. (a) $\frac{2}{3}$ m (b) 4 m

Section 5.5

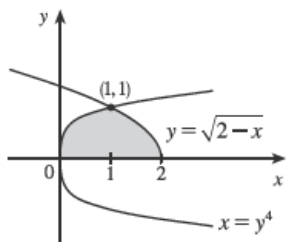
6. $\frac{1}{3}(2t+1)^{3/2} + C$ 24. $\frac{2}{5}(x+2)^{5/2} - \frac{4}{3}(x+2)^{3/2} + C$ 30. $-\cot x + C$

Review Chapter 5

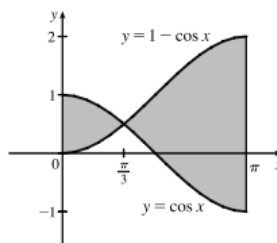
38. $\frac{15}{4}$ 48. $g'(x) = \frac{\cos^3 x}{1 + \sin^4 x}$ 58. (a) $\frac{175}{6}$ meters (b) $\frac{177}{6}$ meters

Section 6.1

20. $\int_0^1 [2 - y^2 - y^4] dy = \frac{22}{15}$



24. $\int_0^{\pi/3} (2 \cos x - 1) dx + \int_{\pi/3}^{\pi} (1 - 2 \cos x) dx = 2\sqrt{3} + \frac{\pi}{3}$

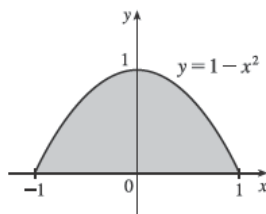


Section 6.2

28. $\pi \int_0^1 (y^2 - y^8) dy$

30. $\pi \int_0^1 [(1-x)^2 - (1-\sqrt[4]{x})^2] dx = \pi \int_0^1 (x^2 - 2x - \sqrt{x} + 2\sqrt[4]{x}) dx$

58. $V = \int_0^1 4(1-y) dy = 2$



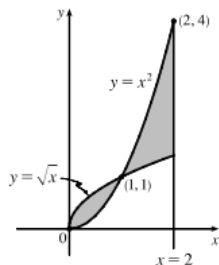
Additional Problems

A6: 1d. $\int_1^2 (y^3 - y^2)^2 dy = \frac{117}{35}$

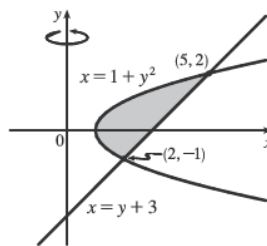
A7: 2b. $\int_0^{\pi/4} (2 \cos x - \tan x)^2 dx = \int_0^{\pi/4} (4 \cos^2 x - 4 \sin x + \tan^2 x) dx = \frac{\pi}{4} + 2\sqrt{2} - 2$

Review Chapter 6

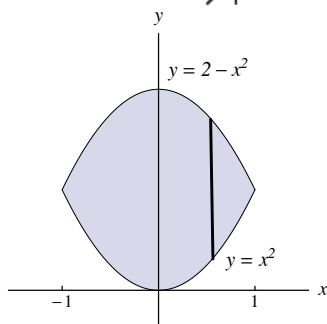
6. $A = \int_0^1 (\sqrt{x} - x^2) dx = \frac{10}{3} - \frac{4}{3}\sqrt{2}$



8. $\pi \int_{-1}^2 [(y+3)^3 - (1+y^2)^2] dy = \frac{117}{5}\pi$



24. $\int_{-1}^1 (2 - 2x^2)^2 dx = \frac{64}{15}$



Section 7.1

10. $\frac{2}{3}x^{3/2}\left(\ln x - \frac{2}{3}\right) + C$ 12. $y \tan^{-1}(2y) - \frac{1}{4} \ln(1 + 4y^2) + C$

Section 7.2

4. $\frac{8}{15}$

12. $\int_0^{\pi/2} (2 - \sin \theta)^2 d\theta = \int_0^{\pi/2} (2 - 4 \sin \theta + \sin^2 \theta) = \int_0^{\pi/2} (2 - 4 \sin \theta + \frac{1}{2} - \frac{1}{2} \cos 2\theta) = \frac{9}{4}\pi - 4$

28. $\frac{1}{7} \sec^7 x - \frac{2}{5} \sec^5 x + \frac{1}{3} \sec^3 x + C$