

1. (a) $-\frac{2}{3}(\cos(x))^{3/2} + C$

(b) $2 \sin^{-1} \left(\frac{x+1}{2} \right) + \frac{x+1}{2} \sqrt{3-2x-x^2} + C$

2. (a) 4

(b) $\frac{1}{2} \ln(2) - \frac{\pi}{12}$

3. $\frac{35+9\pi}{18+3\pi}$

4. (a) Converges to 2

(b) Diverges

5. $\frac{12250}{3} \pi R^4$ Joules

6. (a) $\int_1^4 \sqrt{1+25x^3} dx$

(b) $\frac{3}{8} \cdot \left(\sqrt{1+25} + 2\sqrt{1+25 \cdot \left(\frac{7}{4}\right)^3} + 2\sqrt{1+25 \cdot \left(\frac{10}{4}\right)^3} + 2\sqrt{1+25 \cdot \left(\frac{13}{4}\right)^3} + \sqrt{1+25 \cdot (4)^3} \right)$

7. (a) $\frac{\pi}{4}$

(b) $\frac{\pi^3}{8} + \frac{\pi}{2}$

8. (a) $\frac{1}{6} \cdot (7+2\pi)$

(b) 4

9. $y = -\sqrt{9 + \sin(x^2)}$

10. $t = \frac{4 \ln 29}{\ln 29 - \ln 5} \approx 7.66$