Answers: Part 5

1. (a) 11 (b) $\frac{1}{5}x^5 + \frac{14}{3}x^3 + 49x + C$ (c) $\frac{33}{15}$

(d) $2xe^{2x} - e^{2x} + C$ (e) $\ln|x+1| + \frac{1}{x+1} + C$

(f) $\frac{2}{3}x^3 - \frac{3}{2}x^2 + 5x + C$ (g) $3e^x - \ln|x| + C$

(h) $2\sqrt{x}\ln x - 4\sqrt{x} + C$ (i) $\frac{1}{e^4} - 1$ (j) $2x + \ln|x| + \frac{1}{x} + C$

(k) $xe^x - e^x + C$ (l) $\frac{14}{3} + \ln 4$ (m) $2e^{\sqrt{x}} + C$

(n) $1 - \frac{2}{e}$ (o) $\ln|e^x + 1| + C$ (p) $x - e^{-x} + C$

(q) $x^2e^x - 2xe^x + 2e^x + C$ (r) $x\ln x - x + C$

(s) $\frac{1}{3}(5)^{3/2}$ (t) -1 (u) undefined $\frac{1}{x}$ D.N.E. at $x=0$

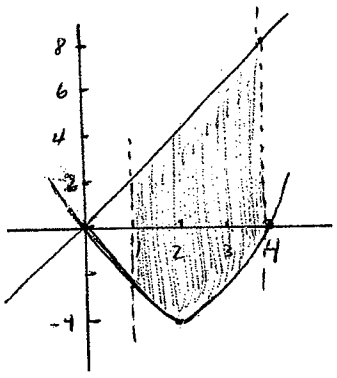
2. $A_1 = 9$ $A_2 = 5$ $A_3 = 3$ $A_4 = 7$

3. (a) $c(x) = 2x^2 - 5x + 8$

(b) $f(x) = 2x^3 - 4x - 3$

4. (a) $4\frac{1}{2}$ (b) $29\frac{1}{3}$ (c) $8\frac{1}{6}$ (d) $112\frac{1}{4}$

(e)



$$\text{Area} = \int_1^4 (2x - x^2 + 4x)\,dx$$

5. (a). $s(t) = \frac{t^3}{3} - \frac{t^2}{2} - 6t + 8$ (b) $s(2) = -3\frac{1}{3}$ cm. from origin.

(c). $s(3) = -5\frac{1}{2}$ cm. from origin.

6. (a) $f(x) = x^3 - 2x^2 + x + 13$
   (b) $26\frac{2}{3}$
   (c) $13\frac{1}{3}$

7. (a) 5
   (b) $\approx \$20.15$

8. (a) 4,320
   (b) 120

9. $\frac{10{,}000}{-.08}\left(e^{-1.2} - 1\right)$

10. $\frac{5{,}000}{-.05}\left(e^{-.6} - 1\right)$

11. Choose Prize B. The present money value of Prize A is less than \$1300.

12. (a) \$10,000
    (b) $\frac{50000}{-3}\left(e^{-.6} - 1\right) \approx \$7{,}520$
    (c) $\approx \$13{,}702$
    (d) $\approx \$3{,}702$

13. (a) \$8,000
    (b) $\approx \$4{,}228$
    (c) $\approx \$11{,}492$

14. (a) diverges
    (b) diverges
    (c) converges to 1
    (d) converges to $\frac{1}{2}$