Text Answers Sections 28-34

Section 28

1. $2x+C$ 2. $\frac{1}{2}x^2+\frac{1}{4}x^4+C$ 3. $12x-\frac{3}{2}x^2+C$ 4. $6\sqrt{t}+C$

5. $\frac{3}{5}x^{\frac{5}{3}}+\frac{3}{2}x^{\frac{2}{3}}+C$ 6. $9t^{-1}-2\ln|t|+C$ 7. $\frac{3}{5}x^{\frac{5}{3}}+\frac{1}{x}+C$

8. $\frac{2}{5}x^{\frac{5}{2}}-2x^{\frac{1}{2}}+\sqrt{6}x+C$ 9. $\frac{2}{3}x^{\frac{3}{2}}+3\ln|x|-e^x+C$ 10. $\frac{3}{2}u^{\frac{2}{3}}-2u+C$

11. $\frac{2}{7}x^{\frac{7}{2}}-\frac{2}{3}x^{\frac{3}{2}}+C$ 12. $f(x)=x+e^x+\ln|x|+2$ 13. $C(x)=2x^3+\frac{5}{2}x^2+12$

14. $C(x)=5x+x^2+\ln|x|+494$ 15. $P(x)=-60+4x-3x^2+3x^3$

Section 29

1. $\frac{1}{18}(3x+1)^6+C$ 2. $-\frac{1}{4}(-t+1)^4+C$ 3. $\frac{1}{6}(4x-1)^{\frac{3}{2}}+C$

4. $-\frac{1}{5}\left(x^4-x^2+x\right)^5+C$ 5. $\frac{1}{8}\left(x^2+1\right)^4+C$ 6. $2e^{2x}+C$

7. $\frac{2}{5}\ln\left|x^5+1\right|+C$ 8. $\frac{1}{3}e^{x^3-4}+C$ 9. $\frac{1}{7}(x-2)^7+\frac{1}{3}(x-2)^6+C$

10. $\frac{1}{2}\ln\left|e^{2x}+5\right|+C$ 11. $\frac{1}{2}(\ln x)^2+C$

12. (a) $P(x)=-\frac{1}{2}e^{-x^2}+8000+\frac{1}{2e^{16}}$ (b) $8000+\frac{1}{2e^{16}}$ 13. $p(x)=\frac{250}{\sqrt{1+x^2}}+50-25\sqrt{10}$

14. $C(x)=10x-\frac{1}{2}\ln\left|x^2+1\right|-\frac{1}{2}\left(\frac{1}{x^2+1}\right)+680.1+\frac{1}{2}\ln 5$

Section 30

1. xe^x-e^x+C 2. xe^x+C 3. $2e^x(x-1)+C$ 4. $\frac{1}{3}xe^{3x}-\frac{10}{9}e^{3x}+C$

5. $-5(x+5)e^{-\frac{x}{5}}+C$ 6. $\frac{1}{2}x^2\ln x-\frac{1}{4}x^2+C$ 7. $\frac{1}{4}x^4\ln x-\frac{1}{16}x^4+C$

8. $x\ln(2x)-x+C$ 9. $-\frac{1}{x}(\ln x+1)+C$ 10. $\frac{1}{3}x^3\ln(3x)-\frac{1}{9}x^3+C$

11. $-\frac{1}{2}xe^{-2x}-\frac{1}{4}e^{-2x}+\frac{13}{4}$ 12. $R(x)=-x^2e^{-x}-2xe^{-x}-2e^{-x}+10x+2$

Section 31

1. $\frac{14}{3}$ 2. 2 3. $\frac{8}{3}+\ln 3$ 4. $\frac{44}{5}$ 5. e^2-1 6. $\frac{7}{54}$

7. $\frac{3}{8}\left(86^{\frac{4}{3}}-5^{\frac{4}{3}}\right)$ 8. $-\frac{8}{15}$ 9. $-3e^{-2}-e^2$ 10. $\frac{1}{3}(\ln 2)^3$

11. $4\ln 4-3$ 12. $\frac{e^2-1}{4}$

Section 32

1. -3 2. $\frac{8}{3}$ 3. 20 4. 60 5. $e-e^{-5}$ 6. 2

7. $\frac{4}{3}$ 8. $17\frac{1}{3}$ 9. $\frac{7}{6}$ 10. $\frac{1}{12}$ 11. 2 12. $\frac{1}{3}$

Section 33

1. 2 2. 16 3. 1 4. $2\sqrt{3}-\frac{4}{3}\sqrt{2}$ 5. $\frac{1}{2}\left(1-e^{-2}\right)$

Answers for problems 6 through 11 may vary SLIGHTLY due to amount of rounding done.

6. (a) \$279,793 (b) \$928,945 7. (a) \$30,324 (b) \$100,679

8. (a) \$143,833 (b) \$477,542 9. \$29,826

10. (a) \$29,117 (b) \$31,606 (c) \$25,896 11. \$1,224,833

Section 34

1. diverges 2. converges to $\frac{1}{2}$ 3. diverges 4. Converges to $-\frac{1}{8}$

5. converges to 1 6. converges to 1 7. diverges 8. diverges

9. diverges 10. 1 11. impossible (discontinuous at $x=-1$)

12. $\int_0^{\infty} f(x)dx$ diverges $\int_{-\infty}^{0} f(x)dx$ converges to $\ln\left(1+e^{-2}\right)$

13. (6) \$472,222 (7) \$45,455 (8) \$285,714 (9) \$57,143

(10a) \$41,677 (10b) \$50,000 (10c) \$33,333 (11) \$3,571,429