Problems for Section 7.2

Find the integrals in Problems 1–40. Check your answers by differentiation.

1. $\int 3x^2(x^3+1)^4\,dx$

3. $\int (x+10)^3\,dx$

5. $\int 2qe^{q^2+1}\,dq$

7. $\int te^{t^2}\,dt$

9. $\int t^2(t^3-3)^{10}\,dt$

11. $\int x(x^2-4)^{7/2}\,dx$

13. $\int \frac{1}{\sqrt{4-x}}\,dx$

Solutions

Section 7.2

1 $\frac{1}{5}(x^3+1)^5 + C$

3 $\frac{1}{4}(x+10)^4 + C$

5 $e^{q^2+1} + C$

7 $(1/2)e^{t^2} + C.$

9 $(1/33)(t^3-3)^{11} + C$

11 $(1/9)(x^2-4)^{9/2} + C$

13 $-2\sqrt{4-x} + C$

15 $4\sin(x^3) + C$

17 $(1/5)x^5 + 2x^3 + 9x + C$

19 $\cos(3-t) + C$

21 $-(2/9)(\cos 3t)^{3/2} + C$

23 $(1/7)\sin^7\theta + C$

25 $(\sin x)^3/3 + C$

27 $-\frac{1}{8}\cos(4x^2) + C$

29 $\frac{1}{6}e^{3x^2} + C$

31 $\frac{1}{10}\ln(5q^2+8) + C$

33 $(1/2)\ln(y^2+4) + C$

35 $2e^{\sqrt{y}} + C$

37 $2\sqrt{x+e^x} + C$

39 $(1/2)\ln(x^2+2x+19) + C$

41 (a) Yes; $-0.5\cos(x^2) + C$
   (b) No
   (c) No
   (d) Yes; $-1/(2(1+x^2)) + C$
   (e) No
   (f) Yes; $-\ln|2+\cos x| + C$

43 (a) $x^4 + 2x^2 + C$
   (b) $(x^2+1)^2 + C$
   (c) Both correct but differ by a constant