Section 5-3 : Substitution Rule for Indefinite Integrals

For problems 1 – 31 evaluate the given integral.

1. $\int 12v\left(7+6v^2\right)^9 dv$

2. $\int \left(4x^3-12x\right)\left(x^4-6x^2\right)^{-3} dx$

3. $\int \left(z^2-4\right)\left(12z-z^3\right)^4 dz$

4. $\int 7z^2\left(14+8z^3\right)^{-5} dz$

5. $\int 3\left(y^6-4y^{-3}\right)\left(y^7+14y^{-2}-7\right)^6 dy$

6. $\int \left(\frac{1}{2}x^3-1\right)\sqrt{8x-x^4}\, dx$

7. $\int \left(6w^{-4}+12w^{-7}\right)\sqrt[4]{w^{-3}+w^{-6}}\, dw$

8. $\int \cos\left(7t\right) dt$

9. $\int \left(v-2v^3\right)\cos\left(v^2-v^4\right) dv$

10. $\int \sqrt{z}\sin\left(1+\sqrt{z^3}\right) dz$

11. $\int \csc^2\left(1+2x\right) dx$

12. $\int 7w^{-5}\sec\left(w^{-4}\right)\tan\left(w^{-4}\right) dw$

13. $\int \left(2-t^2\right)\mathbf{e}^{6t-t^3}\, dt$

14. $\int 12z^{-2}\mathbf{e}^{4+z^{-1}}\, dz$

15. $\int \frac{1}{4-9w}\, dw$

16. $\int \frac{9y}{y^2+3}\,dy$

17. $\int \frac{6x^2-10x^4}{x^5-x^3}\,dx$

18. $\int \frac{1}{t}\sin\left(1-\ln\left(t\right)\right)dt$

19. $\int \left[6v-18\sin\left(6v\right)\right]\sqrt[5]{v^2+\cos\left(6v\right)}\,dv$

20. $\int \mathbf{e}^{-3z}\sec\left(\mathbf{e}^{-3z}\right)\tan\left(\mathbf{e}^{-3z}\right)dz$

21. $\int \left(\cos\left(x\right)+\sin\left(x\right)\right)\mathbf{e}^{\sin(x)-\cos(x)}\,dx$

22. $\int \frac{\left[\ln\left(w^2\right)\right]^4}{w}\,dw$

23. $\int \cos\left(v\right)\cos\left(1+\sin\left(v\right)\right)dv$

24. $\int \frac{y+\sin\left(2y\right)}{y^2-\cos\left(2y\right)}\,dy$

25. $\int \sec^7\left(t\right)\tan\left(t\right)dt$

26. $\int \mathbf{e}^z\sec^2\left(\mathbf{e}^z\right)\left[1+\tan\left(\mathbf{e}^z\right)\right]^{-3}dz$

27. $\int \frac{7}{1+5x^2}\,dx$

28. $\int \frac{2}{3+4t^2}\,dt$

29. $\int \frac{1}{\sqrt{16-y^2}}\,dy$

30. $\int \frac{3}{\sqrt{7-4v^2}}\,dv$

31. $\int \frac{x}{1+x^4}\,dx$

32. Evaluate each of the following integrals.

(a) $\int \frac{1}{3+x}\,dx$

(b) $\int \frac{x}{3+x^2}\,dx$

(c) $\int \frac{x}{\left(3+x^2\right)^7}\,dx$

(d) $\int \frac{1}{3+x^2}\,dx$

33. Evaluate each of the following integrals.

(a) $\int \frac{4w}{25+9w^2}\,dw$

(b) $\int \frac{4w}{\left(25+9w^2\right)^3}\,dw$

(c) $\int \frac{4}{25+9w^2}\,dw$