Section 5-4 : More Substitution Rule

Evaluate each of the following integrals.

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

2. $\int \frac{4}{\left(9+6t\right)^5}+\frac{13}{9+6t}\,dt$

3. $\int \left(6-5w\right)\mathbf{e}^{12w-5w^2}+\left(20w-24\right)\sec^2\left(12w-5w^2\right)dw$

4. $\int \frac{\sin\left(1+\ln\left(2x\right)\right)-\sqrt{1+\ln\left(2x\right)}}{x}\,dx$

5. $\int 17\left(x\mathbf{e}^x+\mathbf{e}^x\right)\sin\left(x\mathbf{e}^x\right)-14\sin\left(x\right)dx$

6. $\int \frac{1}{3t}+\sec\left(9t\right)\tan\left(9t\right)\mathbf{e}^{\sec(9t)}\,dt$

7. $\int 8w^2+\frac{\sin\left(w\right)+\cos\left(w\right)}{\sin\left(w\right)-\cos\left(w\right)}\,dw$

8. $\int 8+\left(3+x^6\right)\cos\left(21x+x^7\right)+9x^2-4\sqrt{x}\,dx$

9. $\int \sin\left(y\right)\cos\left(y\right)\sqrt{3+\sin^2\left(y\right)}+5\mathbf{e}^y\,dy$

10. $\int \sin\left(2-t\right)+8\cos\left(5t\right)-\mathbf{e}^{3t}\,dt$

11. $\int \frac{4x^2-1}{\sqrt[4]{6x-8x^3}}+9x\mathbf{e}^{x^2}\,dx$

12. $\int z^3+\sqrt{4-3z}-4\sec\left(8z\right)\tan\left(8z\right)dz$

13. $\int \frac{17}{6-w}+\sin\left(w\right)\sin\left[1+\cos\left(w\right)\right]dw$

14. $\int \frac{\sqrt{1+2\ln(7x)}}{x} + \frac{10x^3}{x^4+9}\,dx$

15. $\int x\sin\left(x^2\right)\left[\cos^4\left(x^2\right)+8\cos^2\left(x^2\right)-10\right]dx$

16. $\int \csc\left(\frac{t}{2}\right)\cot\left(\frac{t}{2}\right)\left[\csc^6\left(\frac{t}{2}\right)+3\csc^4\left(\frac{t}{2}\right)-8\csc\left(\frac{t}{2}\right)\right]dt$

17. $\int \frac{3+7y}{y^2+3}\,dy$

18. $\int \frac{15z+27}{100z^2+11}\,dz$

19. $\int \frac{8x+1}{\sqrt{16-x^2}}\,dx$

20. $\int \frac{2-w}{\sqrt{25-2w^2}}\,dw$

21. $\int \frac{9z^5}{2+3z^3}\,dz$

22. $\int 4t^{15}\sqrt{1-t^8}\,dt$

23. $\int \cot(x)\,dx$

24. $\int \csc(x)\,dx$

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

26. $\int \mathbf{e}^{8t}\left(4+\mathbf{e}^{4t}\right)^{-3}dt$

27. $\int x^8\sqrt{2-x^3}\,dx$