Section 5-3 : Substitution Rule for Indefinite Integrals

For problems 1 – 16 evaluate the given integral.

1. $\int (8x-12)\left(4x^2-12x\right)^4\,dx$

2. $\int 3t^{-4}\left(2+4t^{-3}\right)^{-7}\,dt$

3. $\int (3-4w)\left(4w^2-6w+7\right)^{10}\,dw$

4. $\int 5(z-4)\,\sqrt[3]{z^2-8z}\,dz$

5. $\int 90x^2\sin\left(2+6x^3\right)dx$

6. $\int \sec(1-z)\tan(1-z)\,dz$

7. $\int \left(15t^{-2}-5t\right)\cos\left(6t^{-1}+t^2\right)dt$

8. $\int \left(7y-2y^3\right)\mathbf{e}^{y^4-7y^2}\,dy$

9. $\displaystyle\int \frac{4w+3}{4w^2+6w-1}\,dw$

10. $\int \left(\cos(3t)-t^2\right)\left(\sin(3t)-t^3\right)^5\,dt$

11. $\displaystyle\int 4\left(\frac{1}{z}-\mathbf{e}^{-z}\right)\cos\left(\mathbf{e}^{-z}+\ln z\right)dz$

12. $\int \sec^2(v)\,\mathbf{e}^{1+\tan(v)}\,dv$

13. $\int 10\sin(2x)\cos(2x)\sqrt{\cos^2(2x)-5}\,dx$

14. $\displaystyle\int \frac{\csc(x)\cot(x)}{2-\csc(x)}\,dx$

15. $\displaystyle\int \frac{6}{7+y^2}\,dy$

16. $\int \frac{1}{\sqrt{4-9w^2}}\,dw$

17. Evaluate each of the following integrals.

(a) $\int \frac{3x}{1+9x^2}\,dx$

(b) $\int \frac{3x}{\left(1+9x^2\right)^4}\,dx$

(c) $\int \frac{3}{1+9x^2}\,dx$