

Exercise 3. Integration using algebraic substitutions

In Problems 1 to 6, integrate with respect to the variable.

1. $2 \sin(4x + 9)$

2. $3 \cos(2\theta - 5)$

3. $4 \sec^2(3t + 1)$

4. $\frac{1}{2}(5x - 3)^6$

5. $\frac{-3}{(2x - 1)}$

6. $3e^{3\theta + 5}$

In Problems 7 to 10, evaluate the definite integrals correct to 4 significant figures.

7. $\int_0^1 (3x + 1)^5 dx$

8. $\int_0^2 x\sqrt{2x^2 + 1} dx$

9. $\int_0^{\pi/3} 2\sin\left(3t + \frac{\pi}{4}\right) dt$

10. $\int_0^1 3\cos(4x - 3) dx$

Exercise 4. Integration using algebraic substitutions

In Problems 1 to 7, integrate with respect to the variable.

1. $2x(2x^2 - 3)^5$

2. $5 \cos^5 t \sin t$

3. $3 \sec^2 3x \tan 3x$

4. $2t\sqrt{3t^2 - 1}$

5. $\frac{\ln \theta}{\theta}$

6. $3 \tan 2t$

7. $\frac{2e^t}{\sqrt{e^t + 4}}$

In Problems 8 to 10, evaluate the definite integrals correct to 4 significant figures.

8. $\int_0^1 3xe^{(2x^2-1)} dx$

9. $\int_0^{\pi/2} 3 \sin^4 \theta \cos \theta d\theta$

10. $\int_0^1 \frac{3x}{(4x^2 - 1)^5} dx$