

Math 187 – Basic Substitution Tutorial

Evaluate the following integrals using basic substitution.

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

2. $\int \frac{\csc^2 x dx}{\cot x + 3}$

3. $\int x^2 \sqrt{x^3 - 5} dx$

4. $\int \frac{\cos \theta}{1 - \sin \theta} d\theta$

5. $\int \frac{e^{1/x}}{x^2} dx$

6. $\int \frac{\sec \theta \tan \theta d\theta}{\sqrt{1 - \sec \theta}}$

7. $\int \frac{2x+1}{(x^2+x)^7} dx$

$$8. \int \frac{\sin y}{\cos^2 y} dy$$

$$9. \int \frac{e^{2x}}{1+e^{2x}} dx$$

$$10. \int x \sin x^2 dx$$

$$11. \int \left(1 + \frac{1}{t}\right)^3 \left(\frac{1}{t^2}\right) dt$$

$$12. \int e^{-t} \sin(e^{-t}) dt$$

$$13. \int \frac{1 - \cos \theta}{\theta - \sin \theta} d\theta$$

$$14. \int \frac{\sin^{-1} x}{\sqrt{1-x^2}} dx$$

$$15. \int \frac{\sec^2 x}{e^{\tan x}} dx$$