# 5.7 – *u*-Substitution, Part I

To "undo" the chain rule, we have make substitutions to simplify the integrand. Given that *f* is integrable and *g* is differentiable, we have the general form

$$\int f'\left(g\left(x\right)\right)g'\left(x\right)dx = f\left(g\left(x\right)\right)+C$$

Integrate.

1. $\int x^2\left(4-3x^3\right)^5 dx$

2. $\int \frac{5x-3}{\sqrt{5x^2-6x}}dx$

3. $\int e^{-x}\sin\left(e^{-x}\right)dx$

4. $\int \sin 2\theta \cos 2\theta \, d\theta$

5. $\int \frac{e^{\sqrt{u}}}{\sqrt{u}}\,du$

6. $\int \sec^3 x \tan x\,dx$