

Math 1220 #8

Basic Integration Rules

Basic Integration Rules: Substitution

u-substitution for Integration

Let g be a differentiable function and suppose F is an antiderivative of f .

If $u = g(x)$, then $\int f(g(x))g'(x)dx = \int f(u)du = F(u) + c = F(g(x)) + c$.

EX 1

$$\int \frac{3x}{\sin^2(4x^2)} dx$$

EX 2

$$\int \frac{5e^{3/x^2}}{x^3} dx$$

EX 3

$$\int \frac{5}{9 + (2x - 1)^2} dx$$

EX 4

$$\int \frac{3x^2 - 4x + 2}{x - 2} dx$$

EX 5

$$\int \frac{2x}{\sqrt{1-x^4}} dx$$

EX 6

$$\int \frac{\sin(\ln(4x^2))}{x} dx$$