

Millersville University  
Mathematics Department  
MATH 161, Integration by Substitution Practice

Use the Method of Substitution to evaluate the following definite and indefinite integrals.

1.  $\int 2x(x^2 + 3)^4 dx$

6.  $\int_0^{\sqrt{\pi}} x \cos(x^2) dx$

2.  $\int_0^1 x^2(1 + 2x^3)^5 dx$

7.  $\int e^x \sqrt{1 + e^x} dx$

3.  $\int \sec x \tan x \sqrt{1 + \sec x} dx$

8.  $\int_1^4 \frac{1}{x^2} \sqrt{1 + \frac{1}{x}} dx$

4.  $\int_3^4 \frac{1}{(x - 2)^3} dx$

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

5.  $\int x^2 \sin(1 - x^3) dx$

10.  $\int_e^{e^2} \frac{1}{x \ln x} dx$