

Mathematics 132 – Calculus for Physical and Life Sciences, 2  
Discussion 2 – Practice on Integrals by Substitution  
February 2, 2005

*Goal and Directions*

We want to practice the substitution method for integration on a further collection of examples today. Each group will first work out “their integral” and put their work up on the board when they are done. Then, in additional time, look at the other integrals and find a likely substitution  $u = g(x)$  to try. When all the groups have posted their work, we’ll “compare notes.” There will not be an assignment to hand in from today’s work. But you should take notes on all of the examples as we go through them.

*Integrals*

Group 1:

$$\int te^{t^2} dt$$

Group 2:

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

Group 3:

$$\int \frac{\cos(\sqrt{y})}{\sqrt{y}} dy$$

Group 4:

$$\int \sin(5\theta) \cos^3(5\theta) d\theta$$

Group 5:

$$\int \frac{2^t}{2^t + 1} dt$$

Group 6:

$$\int \frac{x}{\sqrt{x+1}} dx$$

Group 7:

$$\int (x + \sin(x))^3(1 + \cos(x)) dx$$

Group 8:

$$\int \frac{1}{x} \tan(\ln(x)) dx$$

Group 9:

$$\int \frac{1}{x \ln(x)} dx$$