

MAT 136 (Calculus I) Prof. Swift
In-class worksheet: The method of u -substitution, part 2

1. Evaluate the indefinite integral.

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

2. What is the value of b that makes this equality true?

$$\int_0^{\sqrt{\pi}} 2x \sin(x^2) dx = \int_0^b \sin(u) du$$

3. The sine integral function is defined as $\text{Si}(x) = \int_0^x \frac{\sin(t)}{t} dt$. Write the integral $\int_0^2 \frac{\sin(\pi x)}{x} dx$ in terms of the Si function.