

Worksheet 5 - MAC 2312, Spring 2013

1. (a) Derive a reduction formula for $\int \tan^n x \, dx$.

(b) Use your reduction formula from part (a) to compute $\int_0^{\pi/4} \tan^{10} x \, dx$. Can you find an expression for $\int_0^{\pi/4} \tan^n x \, dx$?

2. Find the arclength of the curve $y = x^2$ from $x = 0$ to $x = 1$.

3. Evaluate the integral by first completing the square and then doing a trigonometric substitution

$$\int \sqrt{x(6-x)} \, dx$$