



Examples 6.3 – Other Trigonometric Functions

1. Compute the first and second derivatives of the following functions.

Solution: (a) $f(x) = e^{\tan x}$

(b) $g(x) = \ln(\sec x)$

2. Evaluate $\int \frac{\tan x \sec x}{\sin x} dx$.

Solution:

3. Consider $\int f(kx+b)dx$. We can use the method of u -substitution from Lesson 5.2 by letting

$u = kx + b$, so that $du = kdx$ and $dx = \frac{1}{k} du$. It follows that

$$\int f(kx+b)dx = \int f(u) \cdot \frac{1}{k} du = \frac{1}{k} \int f(u)du = \frac{1}{k} F(u) + C = \frac{1}{k} F(kx+b) + C.$$

In words, if we are integrating a composition in which the inside is the linear function $kx + b$, then we pick up a factor of $1/k$. Use this fact to integrate the following.

Solution: (a) $\int \cos(1.52x - 2.339)dx =$

(b) $\int \sec^2(1 - 3\theta)d\theta =$

(c) $\int \frac{1}{5t-4} dt =$