

Last Name: SOLUTIONS

First Name: \_\_\_\_\_

Student ID: \_\_\_\_\_

## Quiz 1 (B)

Question 1. Find the following derivatives:

(a) (1 mark)  $\frac{d}{dx}(\csc x) = -\csc x \cot x$

(b) (1 mark)  $\frac{d}{dx}(\log_5 x) = \frac{1}{x \ln 5}$

(c) (1 mark)  $\frac{d}{dx}(\arctan x) = \frac{1}{1+x^2}$

(d) (2 marks)  $\frac{d}{dx}(e^{\tan x}) = e^{\tan x} \cdot \sec^2 x$

Question 2. Find the following antiderivatives:

(a) (1 mark)  $\int \sec x \tan x dx = \sec x + C$

(b) (1 mark)  $\int \csc x dx = -\ln|\csc x + \cot x| + C$

(c) (2 marks)  $\int \frac{x^2+1}{x^3} dx = \int \frac{1}{x} + x^{-3} dx = \ln|x| - \frac{1}{2}x^{-2} + C$

(d) (1 mark)  $\int \frac{1}{x\sqrt{x^2-1}} dx = \operatorname{arcsec} x + C \quad \Bigg| \quad = \ln|x| - \frac{1}{2x^2} + C$