

Last Name: SOLUTIONS

First Name: _____

Student ID: _____

Quiz 1 (A)

Question 1. Find the following:

(a) (1 marks) $\frac{d}{dx}(\cot x) = -\csc^2 x$

(b) (1 marks) $\frac{d}{dx}(\arcsin x) = \frac{1}{\sqrt{1-x^2}}$

(c) (1 marks) $\frac{d}{dx}(\sec x) = \sec x \tan x$

(d) (1 marks) $\int \sec^2 x dx = \tan x + C$

(e) (1 marks) $\int \tan x dx = -\ln |\cos x| + C$

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

Question 2. (4 marks) Find the following:

$$\int \frac{(\sqrt{x}-1)^2}{x^2} dx = \int \frac{x - 2\sqrt{x} + 1}{x^2} dx = \int \left(\frac{1}{x} - 2x^{-3/2} + x^{-2} \right) dx$$

$$= \int \frac{1}{x} dx - 2 \int x^{-3/2} dx + \int x^{-2} dx = \ln |x| - 2 \frac{x^{-1/2}}{-1/2} + \frac{x^{-1}}{-1} + C$$

$$= \ln |x| + \frac{4}{x^{1/2}} - \frac{1}{x} + C$$