Name: Y. Lamontagne

Student ID: _____

Quiz 1

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. *(1 mark each)* Differentiate the following functions:

1.

$$f(x) = \frac{1}{x^{2/7}} = x^{-\frac{2}{7}}$$

$$f'(x) = \frac{-2}{7} x^{-9/7}$$

2.

$$f(x) = \cos x$$

$$f'(x) = -\sin x$$

3.

$$f(x) = \tan x$$

$$f'(x) = \sec^2 x$$

4.

$$f(x) = e^x$$

$$f'(x) = e^x$$

5.

$$f(x) = \csc x$$

$$f'(x) = -\csc x \cot x$$

6.

$$f(x) = \arcsin x$$

$$f'(x) = \frac{1}{\sqrt{1-x^2}}$$

Question 2. *(2 marks each)* Differentiate the following functions *(do not simplify)*:

1.

$$f(x) = \arctan e^x$$

$$f'(x) = \frac{1}{1+(e^x)^2} \cdot e^x$$

2.

$$f(x) = \frac{\ln 2x}{x^2+1}$$

$$f'(x) = \frac{\frac{1}{2x} \cdot 2(x^2+1) - \ln 2x(2x)}{(x^2+1)^2}$$