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

a.

$$f(x) = \frac{1}{x^{3/8}}$$

b.

$$f(x) = \operatorname{arccot} x$$

c.

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

d.

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

e.

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

f.

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

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

$$f(x) = (x)\sec(\arctan 3x)$$

Question 3. *(2 marks)* Differentiate the following functions *(do not simplify)*:

$$f(x) = \frac{e^{5x}}{\cos 3x}$$