Books, watches, notes or cell phones are not allowed. The only calculators allowed are the Sharp EL-531\*\*. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work

**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):

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