

First Name: _____ Last Name: _____

Student-No: _____ Section: _____

Very short answer questions

1. 2 marks Each part is worth 1 marks. Please write your **simplified** answers in the boxes.

(a) Differentiate $\log\left(\sqrt{2 + \cos(x)}\right)$. Recall that $\log x = \log_e x = \ln x$.

Answer:

(b) If $x^2 + y^3 = xy + 3$ compute $\frac{dy}{dx}$.

Answer: **Short answer questions — you must show your work**

2. 4 marks Each part is worth 2 marks.

(a) Differentiate $f(x) = (3 \sin(x))^{1/x}$.

(b) For what values of x does the derivative of $\frac{e^x + x}{\cos(x)}$ exist? Explain your answer.

Long answer question — you must show your work

3. 4 marks If $\sin(y)\sqrt{x+6} + x^2 + x \cos(y) = 6$, then find y' at the points where $y = \pi$. You must justify your answer.