

Question 1 (9 marks)

(a) For each of the functions below, determine $f'(x)$. You do not need to simplify your answers.

(i) $f(x) = (2x^5 + 7)^3$.

(2 marks)

(ii) $f(x) = 3\ln(8x+1) + 9\sqrt{x}$.

(2 marks)

(iii) $f(x) = \frac{11-5x}{1+\cos x}$.

(3 marks)

(b) Determine the following integral:

$$\int (e^{4-3x} + x^2) dx.$$

$$\int e^{4-3x} + x^2 dx = -\frac{1}{3}e^{4-3x} + \frac{x^3}{3} + c$$

(2 marks)