Question 1 (9 marks)

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

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

(2 marks)

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

(2 marks)

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

(3 marks)

(b) Determine the following integral:

$$\int \left(e^{4-3x} + x^2\right) \mathrm{d}x.$$

(2 marks)