

Question 1 (9 marks)

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

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

$$f'(x) = 3(2x^5 + 7)^2 \cdot 10x^4$$

(2 marks)

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

$$f(x) = 3\ln(8x+1) + 9x^{1/2}$$
$$f'(x) = \frac{24}{8x+1} + \frac{9}{2}x^{-1/2}$$

(2 marks)

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

$$f'(x) = \frac{-5 \cdot (1 + \cos x) - (11 - 5x) \cdot (-\sin x)}{(1 + \cos x)^2}$$

(3 marks)