

Question 1 (8 marks)

(a) For the functions below, determine $\frac{dy}{dx}$. You do not need to simplify your answers.

(i) $y = 3 \cos(2 + 7x)$.

(2 marks)

(ii) $y = \frac{5x + 2}{x\sqrt{x}}$.

(3 marks)

(b) Evaluate the following integral:

$$\int \frac{2x^2 + x - 1}{x} dx.$$

$$\int \frac{2x^2 + x - 1}{x} dx = \int 2x + 1 - \frac{1}{x} dx$$
$$= x^2 + x - \ln x + C$$

(3 marks)