

8 (a) The expression

$$\frac{x}{2x^2 + 3x + 1}$$

can be written in the form

$$\frac{A}{x+1} + \frac{B}{2x+1}$$

Find the value of A and the value of B

[3 marks]

8 (b) Use your answer to part (a) to show that

$$\int_0^4 \frac{x}{2x^2 + 3x + 1} dx = \ln q$$

where q is a rational number to be found.

[4 marks]