6 (a) Show that

$$\sin(A + B) + \sin(A - B) = 2\sin A \cos B$$

(2)

(b) Hence express $2\sin 7x \cos x$ in the form $\sin mx + \sin nx$ where m and n are integers, giving the value of m and the value of n.

(1)

(c) Use calculus to evaluate

$$\int_0^{\frac{\pi}{4}} (6\sin 7x \cos x)\,\mathrm{d}x$$

(4)

Question 6 continued

Question 6 continued

Question 6 continued

(Total for Question 6 is 7 marks)