

6 (a) Show that

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

(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

$$\int_0^{\frac{\pi}{4}} (6\sin 7x \cos x) dx \quad (4)$$

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