4

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

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

(a) Write down the exact value of $\sin 45°$

(1)

Given that $\sin\theta = \frac{\sqrt{5}}{2\sqrt{2}}$ and $\cos\theta = \frac{\sqrt{3}}{2\sqrt{2}}$

(b) show that $\sin(45° + \theta) = \frac{\sqrt{3} + \sqrt{5}}{4}$

(2)

(c) Find the exact value of $\cos(45° + \theta)$

(2)

(d) Show that $\sin(45° + \theta) \times \cos(45° + \theta) = -\frac{1}{8}$

(2)

Question 4 continued

(Total for Question 4 is 7 marks)