2 Using the identities $\sin(A + B) = \sin A \cos B + \cos A \sin B$

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

$$\tan A = \frac{\sin A}{\cos A}$$

(a) show that $\tan(A + B) = \dfrac{\tan A + \tan B}{1 - \tan A \tan B}$ **(3)**

(b) Hence show that

(i) $\tan 105° = \dfrac{1 + \sqrt{3}}{1 - \sqrt{3}}$ (ii) $\tan 15° = \dfrac{\sqrt{3} - 1}{1 + \sqrt{3}}$ **(4)**

Question 2 continued

(Total for Question 2 is 7 marks)