

6 (a) Show that the equation $\sin\left(x + \frac{1}{6}\pi\right) = \cos\left(x - \frac{1}{4}\pi\right)$ can be written in the form

$$\tan x = \frac{\sqrt{2} - 1}{\sqrt{3} - \sqrt{2}}. \quad [4]$$

(b) Hence solve the equation $\sin\left(x + \frac{1}{6}\pi\right) = \cos\left(x - \frac{1}{4}\pi\right)$ for $0 \leq x \leq 2\pi$. [1]