8. **In this question you must show all stages of your working.**

Solutions relying entirely on calculator technology are not acceptable.

(a) Given that $\cos 2\theta + \cos\theta + 1 \neq 0$, show that

$$\frac{\sin 2\theta + \sin\theta}{\cos 2\theta + \cos\theta + 1} \equiv \tan\theta$$

(3)

(b) Hence solve, for $0 < x < \pi$

$$\frac{\sin 2x + \sin x}{\cos 2x + \cos x + 1} = 2\cos x$$

Give your answers to 3 decimal places.

(5)