

6 It is given that the angle θ satisfies the equation $\sin\left(2\theta + \frac{1}{4}\pi\right) = 3 \cos\left(2\theta + \frac{1}{4}\pi\right)$.

(i) Show that $\tan 2\theta = \frac{1}{2}$. [3]

(ii) Hence find, in surd form, the exact value of $\tan \theta$, given that θ is an obtuse angle. [5]