**5** The first, second and third terms of a geometric progression are sin $\theta$, cos $\theta$ and $2 - \sin\theta$ respectively, where $\theta$ radians is an acute angle.

**(a)** Find the value of $\theta$. [3]

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**(b)** Using this value of $\theta$, find the sum of the first 10 terms of the progression. Give the answer in the form $\dfrac{b}{\sqrt{c}-1}$, where $b$ and $c$ are integers to be found. [3]