

13.

**In this question you must show all stages of your working.
Solutions relying on calculator technology are not acceptable.**

The 3rd, 4th and 5th terms of a geometric sequence are $\sin \theta$, $\sqrt{2} \cos \theta$ and $\sqrt{3} \cot \theta$ respectively, where θ is a constant, $0 < \theta < \frac{\pi}{2}$

(a) Find the exact value of the common ratio of this sequence.

(4)

(b) Hence find, in simplest form, the exact value of the sum of the first 3 terms of the sequence.

(3)