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

Given the first three terms of a geometric sequence are

$$2\sin\theta,\ \cos\theta \text{ and } 1+\sin\theta$$

where $\theta$ is a constant

(a) show that

$$3\sin^2\theta + 2\sin\theta - 1 = 0$$

**(3)**

Given that $\theta$ is acute,

(b) use trigonometric identities to find the exact value of the second term in the sequence.

**(3)**

(c) find the value of the 11th term in the sequence.

**(3)**

**(Total for Question 8 is 9 marks)**

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

Given that $a$ and $b$ are positive constants, solve the simultaneous equations

$$ab = 25$$

$$\log_4 a - \log_4 b = 3$$

Show each step of your working, giving exact values for $a$ and $b$.

**(4)**

**(Total for Question 9 is 4 marks)**

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