9 The first term of a progression is $\cos\theta$, where $0 < \theta < \frac{1}{2}\pi$.

(a) For the case where the progression is geometric, the sum to infinity is $\dfrac{1}{\cos\theta}$.

    (i) Show that the second term is $\cos\theta\sin^2\theta$. [3]

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    (ii) Find the sum of the first 12 terms when $\theta = \frac{1}{3}\pi$, giving your answer correct to 4 significant figures. [2]

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(b) For the case where the progression is arithmetic, the first two terms are again $\cos \theta$ and $\cos \theta \sin^2 \theta$ respectively.

Find the 85th term when $\theta = \frac{1}{3}\pi$. [4]

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