

6 The first, third and fourth terms of an arithmetic progression are u_1 , u_3 and u_4 respectively, where

$$u_1 = 2 \sin \theta, \quad u_3 = -\sqrt{3} \cos \theta, \quad u_4 = \frac{7}{2} \sin \theta,$$

and $\frac{1}{2}\pi < \theta < \pi$.

(a) Determine the exact value of θ . **[3]**

(b) Hence determine the value of $\sum_{r=1}^{100} u_r$. **[3]**