

- 9 (a) Two convergent geometric progressions, P and Q , have the same sum to infinity. The first and second terms of P are 6 and $6r$ respectively. The first and second terms of Q are 12 and $-12r$ respectively. Find the value of the common sum to infinity. [3]
- (b) The first term of an arithmetic progression is $\cos \theta$ and the second term is $\cos \theta + \sin^2 \theta$, where $0 \leq \theta \leq \pi$. The sum of the first 13 terms is 52. Find the possible values of θ . [5]