

9 (i) Prove the identity $\frac{\sin \theta}{1 - \cos \theta} - \frac{1}{\sin \theta} \equiv \frac{1}{\tan \theta}$. [4]

(ii) Hence solve the equation $\frac{\sin \theta}{1 - \cos \theta} - \frac{1}{\sin \theta} = 4 \tan \theta$ for $0^\circ < \theta < 180^\circ$. [3]