

**Question 3**

**(25 marks)**

(a) Show that  $\frac{\cos 7A + \cos A}{\sin 7A - \sin A} = \cot 3A$ .

(b) Given that  $\cos 2\theta = \frac{1}{9}$ , find  $\cos \theta$  in the form  $\pm \frac{\sqrt{a}}{b}$ , where  $a, b \in \mathbb{N}$ .

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