1.

   (a) By first expanding $\cos(2\theta + \theta)$, show that $\cos 3\theta \equiv 4\cos^3 \theta - 3\cos \theta$. [3]

   (b) Find the exact value of $2\cos^3\left(\frac{5}{18}\pi\right) - \frac{3}{2}\cos\left(\frac{5}{18}\pi\right)$. [2]

2.

(a) Prove that $4\sin x \sin(x + \frac{1}{6}\pi) \equiv \sqrt{3} - \sqrt{3}\cos 2x + \sin 2x$. [3]

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