

5(a)

Use $\tan^4 \theta = \frac{\sin^4 \theta}{\cos^4 \theta}$ or $\tan^4 \theta - 1 = \left(\frac{\sin^2 \theta}{\cos^2 \theta} + 1 \right) + \left(\frac{\sin^2 \theta}{\cos^2 \theta} - 1 \right)$

Attempt to express $\tan^4 \theta - 1$ as a single fraction in terms of $\cos \theta$ only

Confirm result $\frac{1 - 2\cos^2 \theta}{\cos^4 \theta}$

Alternative Method for Question 5(a)

$$\frac{1 - 2\cos^2 \theta}{\cos^4 \theta} + \frac{\cos^4 \theta}{\cos^4 \theta} - 1$$

$$\frac{(1 - \cos^2 \theta)^2}{\cos^4 \theta} - 1$$

Confirm result $\tan^4 \theta - 1$

Alternative Method 2 for Question 5(a)

$$\tan^4 \theta = \sec^4 \theta - 2\sec^2 \theta + 1$$

$$\tan^4 \theta - 1 = \frac{1}{\cos^4 \theta} - \frac{2}{\cos^2 \theta}$$

Confirm result $\frac{1 - 2\cos^2 \theta}{\cos^4 \theta}$

5(b)	Use identity to form equation using $\cos \theta$ only
	Obtain $9\cos^2 \theta = 1$ or similarly simplified equivalent
	Solve equation of form $\cos^2 \theta = k$ to obtain at least one solution
	Obtain 70.5 and 109.5