



Air maths tuition

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## Trigonometric Identities to Prove 7

Prove  $\cos^4\theta - \sin^4\theta + 1 \equiv 2\cos^2\theta$

$$a^2 - b^2 \equiv (a-b)(a+b)$$

$$\begin{aligned}\text{Proof: } \cos^4\theta - \sin^4\theta + 1 &\equiv (\cos^2\theta - \sin^2\theta)(\cos^2\theta + \sin^2\theta) + 1 \\ &\equiv \cos^2\theta - \sin^2\theta + 1 \\ &\equiv \cos^2\theta - (1 - \cos^2\theta) + 1 \\ &\equiv \cos^2\theta - 1 + \cos^2\theta + 1 \\ &\equiv 2\cos^2\theta\end{aligned}$$



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