



Air maths tuition

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## Trig Identities to Prove - Double Angles (3)

Prove:  $\cos 4\theta \equiv 8\cos^4\theta - 8\cos^2\theta + 1$  |  $\cos 2A \equiv 2\cos^2A - 1$

Proof:  $\cos 4\theta \equiv \cos 2(2\theta)$

$$\equiv 2\cos^2 2\theta - 1$$

$$\equiv 2(2\cos^2\theta - 1)^2 - 1$$

$$\equiv 2(2\cos^2\theta - 1)(2\cos^2\theta - 1) - 1$$

$$\equiv 2(4\cos^4\theta - 2\cos^2\theta - 2\cos^2\theta + 1) - 1$$

$$\equiv 2(4\cos^4\theta - 4\cos^2\theta + 1) - 1$$

$$\equiv 8\cos^4\theta - 8\cos^2\theta + 2 - 1$$

$$\equiv 8\cos^4\theta - 8\cos^2\theta + 1$$



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