

## Answer on Question #63972 – Math – Trigonometry

### Question

If  $\tan a = b/a$ , prove that  $a \cos 2a + b \sin 2a = a$ .

### Proof

It follows from  $\tan a = b/a$  that  $\cos a = \frac{a}{b} \sin a$ .

Substituting the previous formula into

$$\begin{aligned} a \cos 2a + b \sin 2a &= a(\cos^2 a - \sin^2 a) + b \cdot 2 \sin a \cos a = \\ &= a(\cos^2 a - \sin^2 a) + b \cdot 2 \sin a \cdot \frac{a}{b} \sin a = a(\cos^2 a - \sin^2 a) + 2a \sin^2 a = \\ &= a(\cos^2 a + \sin^2 a) = a \end{aligned}$$

QED