Worked example

Simplify:

$$\sin^2 \frac{1}{3}y + \cos^2 \frac{1}{3}y$$

$$\cos^2(3\theta - 10) + \sin^2(3\theta - 10)$$

Your turn

Simplify:

$$\sin^2 3x + \cos^2 3x$$

1

Worked example

Prove that $1 - \frac{\tan\theta \cos^3\theta}{\sin\theta} \equiv \sin^2\theta$

Your turn

Prove that $1 - \tan\theta \sin\theta \cos\theta \equiv \cos^2\theta$

Proof

Worked example

Prove that $\tan\theta - \frac{1}{\tan\theta} \equiv \frac{1-2\cos^2\theta}{\sin\theta\, cos\theta}$

Your turn

Prove that $\tan\theta + \frac{1}{\tan\theta} \equiv \frac{1}{\sin\theta\cos\theta}$

Proof

Worked example	Your turn
Simplify $10 - 10\cos^2\theta$	Simplify $5 - 5\sin^2\theta$ $5\cos^2\theta$

Worked example

Simplify:

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

Your turn

Simplify:

$$\frac{\sin 2\theta}{\sqrt{1-\sin^2 2\theta}}$$

$\tan 2\theta$

Worked example

Prove that

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

Your turn

Prove that

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

Proof

Worked example

Prove that

$$\frac{\frac{\sin x}{\tan x}}{\sqrt{1-\sin^2 x}} \equiv 1$$

Your turn

Prove that

$$\frac{\tan x \cos x}{\sqrt{1-\cos^2 x}} \equiv 1$$

Proof

Worked example

Prove that

$$\frac{1}{\tan^2\theta} \equiv \frac{1}{\sin^2\theta} - 1$$

Your turn

Prove that

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

Proof

Worked example

Given that $p = 4\cos\theta$ and $q = 5\sin\theta$, show that $25p^2 + 16q^2 = 400$

Your turn

Given that $p = 3\cos\theta$ and $q = 2\sin\theta$, show that $4p^2 + 9q^2 = 36$

Shown