



Trigonometric Ratios of multiple and Sub multiple Angles Ex 9.1 Q 1

We have,

$$\begin{aligned}\sqrt{\frac{1 - \cos 2\theta}{1 + \cos 2\theta}} &= \sqrt{\frac{2 \sin^2 \theta}{2 \cos^2 \theta}} \\ &= \frac{\sin \theta}{\cos \theta} \\ &= \tan \theta = \text{RHS}\end{aligned}$$

Trigonometric Ratios of multiple and Sub multiple Angles Ex 9.1 Q 2

LHS,

$$\begin{aligned}\frac{\sin 2\theta}{1 - \cos 2\theta} &= \frac{2 \sin \theta \cos \theta}{2 \sin^2 \theta} \\ &= \frac{\cos \theta}{\sin \theta} \\ &= \cot \theta = \text{RHS}\end{aligned}$$

Trigonometric Ratios of multiple and Sub multiple Angles Ex 9.1 Q 3

LHS,

$$\begin{aligned}\frac{\sin 2\theta}{1 + \cos 2\theta} &= \frac{2 \sin \theta \cos \theta}{2 \cos^2 \theta} \\ &= \frac{\sin \theta}{\cos \theta} \\ &= \tan \theta = \text{RHS}\end{aligned}$$

Trigonometric Ratios of multiple and Sub multiple Angles Ex 9.1 Q 4

LHS,

$$\begin{aligned}& \sqrt{2 + \sqrt{2 + 2 \cos 4\theta}} \\&= \sqrt{2 + \sqrt{2(1 + \cos 4\theta)}} \\&= \sqrt{2 + \sqrt{2 \cdot 2 \cos^2 2\theta}} \\&= \sqrt{2 + 2 \cos 2\theta} \\&= \sqrt{2(1 + \cos 2\theta)} \\&= \sqrt{2 \cdot 2 \cos^2 \theta} \\&= 2 \cos \theta = \text{RHS}\end{aligned}$$

Trigonometric Ratios of multiple and Sub multiple Angles Ex 9.1 Q 5

LHS,

$$\begin{aligned}& \frac{1 - \cos 2\theta + \sin 2\theta}{1 + \cos 2\theta + \sin 2\theta} \\&= \frac{2 \sin^2 \theta + 2 \sin \theta \cos \theta}{2 \cos^2 \theta + 2 \sin \theta \cos \theta} \\&= \frac{2 \sin \theta (\sin \theta + \cos \theta)}{2 \cos \theta (\cos \theta + \sin \theta)} \\&= \frac{\sin \theta}{\cos \theta} \\&= \tan \theta = \text{RHS}\end{aligned}$$

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