Warm Up

Prove the following identity:

$$\frac{\sin x}{1-\cos x} - \frac{\sin x \cos x}{1+\cos x} = \csc x\left(1+\cos^2 x\right)$$

LS

$$\frac{\sin x(1+\cos x) - \sin x\cos x(1-\cos x)}{(1-\cos x)(1+\cos x)}$$

$$\frac{\sin x + \sin x\cos x - \sin x\cos x + \sin x\cos^2 x}{1-\cos^2 x}$$

$$\frac{\sin x(1+\cos^2 x)}{\sin^2 x}$$

$$\csc x(1+\cos^2 x)$$

LS = RS

Prove the following identities:

#1. $\dfrac{1}{\sin^2 x}+\dfrac{1}{\cos^2 x}=\dfrac{1}{\sin^2 x\cos^2 x}$

LS

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

$\sin^2 x\cos^2 x$

$\dfrac{1}{\sin^2 x\cos^2 x}$

LS = RS

#2. $\dfrac{\csc\theta}{\cot^2\theta}=\tan\theta\sec\theta$

LS

$\dfrac{\left(\frac{1}{\sin\theta}\right)}{\left(\frac{\cos^2\theta}{\sin^2\theta}\right)}$

$\left(\dfrac{1}{\sin\theta}\right)\cdot\left(\dfrac{\sin^2\theta}{\cos^2\theta}\right)$

$\dfrac{\sin\theta}{\cos^2\theta}$

$\left(\dfrac{\sin\theta}{\cos\theta}\right)\left(\dfrac{1}{\cos\theta}\right)$

$\tan\theta\sec\theta$

RS

$\left(\dfrac{\sin\theta}{\cos\theta}\right)\left(\dfrac{1}{\cos\theta}\right)$

$\dfrac{\sin\theta}{\cos^2\theta}$

#3. $\tan^2\theta+\sin^2\theta=(\sec\theta+\cos\theta)(\sec\theta-\cos\theta)$

RS

$\sec^2\theta-\cos^2\theta$

$1+\tan^2\theta=\sec^2\theta$

$\tan^2\theta=\sec^2\theta-1$

$\sin^2\theta+\cos^2\theta=1$

$\sin^2\theta=1-\cos^2\theta$

LS

$(\sec^2\theta-1)+(1-\cos^2\theta)$

$\sec^2\theta-1+1-\cos^2\theta$

$\sec^2\theta-\cos^2\theta$

LS = RS

Warm Up

Prove the following identities...

#1. $\tan\alpha + \cot\alpha = \sec\alpha \csc\alpha$

LS

$\frac{\sin\theta}{\cos\theta} + \frac{\cos\theta}{\sin\theta}$

$\frac{\sin^2\theta + \cos^2\theta}{\cos\theta\sin\theta}$

$\frac{1}{\cos\theta\sin\theta}$

$\sec\theta\csc\theta$

LS = RS

$\left(\frac{1}{\cos\theta}\right)\left(\frac{1}{\sin\theta}\right)$

$\frac{1}{\cos\theta\sin\theta}$

#2. $\tan\theta + \tan^3\theta = \frac{1}{\cot\theta\cos^2\theta}$

LS

$\tan\theta(1+\tan^2\theta)$

$\tan\theta\sec^2\theta$

$\left(\frac{1}{\cot\theta}\right)\left(\frac{1}{\cos^2\theta}\right)$

$\frac{1}{\cot\theta\cos^2\theta}$

OR

RS

$\tan\theta\sec^2\theta$

$\tan\theta(1+\tan^2\theta)$

$\tan\theta + \tan^3\theta$

$\sin\theta(1-\sin^2\theta)$

$\cos^2\theta$

#3. $\frac{1}{\sec^2\theta\cot\theta} = \frac{\sin\theta - \sin^3\theta}{\cos\theta}$

$\sec\theta\cos\theta\sec\theta$

LS

$\cos^2\theta\tan\theta$

$\frac{\cos^2\theta\sin\theta}{\cos\theta}$

$\cos\theta\sin\theta$

RS

$\frac{\sin\theta(1-\sin^2\theta)}{\cos\theta}$

$\frac{\sin\theta\cos^2\theta}{\cos\theta}$

$\sin\theta\cos\theta$

LS = RS

HOMEWORK...

Worksheet - Trig Identities #1.doc

Do questions #2 - 27

Attachments

Worksheet - Trig Identities #1.doc