Proving Identities II (6.3) p314 day 6

Quiz 9

Proving Identities II (6.3) p314 day 6

HW: p314#1c, 2b, 3c, 7a

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

2b) $\frac{\sin^2 x - \cos^2 x}{\sin x + \cos x} = \sin x - \cos x$

3 $\frac{\sin x}{1+\cos x} + \frac{\cos x}{\sin x}$ (sinx)(sinx) (1+cosx)

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

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

asst 4 due Nov 29

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

$= \frac{1}{\sin x}$

7. a) $\frac{\csc X}{2\cos X} = \csc 2X$

LS: $\frac{\frac{1}{\sin x}}{2\cos x}$ RS: $\frac{1}{\sin 2x}$

$= \frac{1}{2\sin x \cos x}$ $= \frac{1}{2\sin x \cos x}$

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ex1: Prove that $(1-\sin^2 x)(1-\tan^2 x) = \cos 2x$

LS: $= \cos^2 x\left(1 - \frac{\sin^2 x}{\cos^2 x}\right)$ RS: $= \cos^2 x - \sin^2 x$

$= \cos^2 x - \frac{\sin^2 x \cos^2 x}{\cos^2 x}$

$= \cos^2 x - \sin^2 x$

LS = RS

QED

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ex2: Prove that $\frac{1-\cos x}{\sin x} = \frac{\sin x}{1+\cos x}$

LS: $\frac{1-\cos x}{\sin x}$ RS: $\frac{\sin x}{1+\cos x} \times \frac{1-\cos x}{1-\cos x}$

conjugates

$\frac{1}{\sqrt{6}-\sqrt{2}} \times \frac{\sqrt{6}+\sqrt{2}}{\sqrt{6}+\sqrt{2}}$

$= \frac{\sqrt{6}+\sqrt{2}}{6-2}$

LS = RS

QED

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

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

$= \frac{1-\cos x}{\sin x}$

10b

Proving Identities II (6.3) p314 day 6

HW: p314#11ab

p306#4

assignment due Nov 29

11.a)

$LS = \frac{\sin 2x}{\cos x} + \frac{\cos 2x}{\sin x}$

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

$= \frac{2\sin^2 x}{\sin x} + \frac{1-2\sin^2 x}{\sin x}$ common denom

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

$= \frac{1}{\sin x}$

$RS = \csc x$

$= \frac{1}{\sin x}$

$LS = RS$

QED

11b)

$LS = \csc^2 x + \sec^2 x$

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

$= \frac{\cos^2 x + \sin^2 x}{\sin^2 x \cos^2 x}$

$= \frac{1}{\sin^2 x \cos^2 x}$

$RS = \csc^2 x \sec^2 x$

$= \frac{1}{\sin^2 x} \cdot \frac{1}{\cos^2 x}$

$LS = RS$

QED