Warm up

1. Simplify the following:

a) $\frac{(\sec^2 x - 1)}{(\sec^2 x)}$

$(2\tan x + 3)(\tan x - 1)$

b) sec x tan x cos x

c) sec x - cos x

d) $2\tan^2 x + \tan x - 3$

Homework:

10. $\cot x \tan x$ 1

12. $\cot u \sin u$ $\cos u$

14. $\dfrac{1 - \cos^2 \theta}{\sin \theta}$ $\sin \theta$

27. $(\sin x)(\tan x + \cot x)$ $\sec x$

29. $\sin x \cos x \tan x \sec x \csc x$ $\tan x$

34. $2 \sec^2 x$

40. $(1 - \sin x)^2$

5.1 Proving Identities

Objective: To not get frustrated!

OBJ: 2: DON'T PANIC!

Guidelines for Proving Identities:

1. It is usually best to work on the more complicated side first.
2. Look for trigonometric substitutions involving the basic identities that may help simplify things.
3. Look for algebraic operations, such as adding fractions, the distributive property, or factoring, that may simplify the side you are working with or that will at least lead to an expression that will be easier to simplify.
4. If you cannot think of anything else to do, change everything to sines and cosines and see if that helps.
5. Always keep an eye on the side you are not working with to be sure you are working toward it. There is a certain sense of direction that accompanies a successful proof.
6. Practice, practice, practice!

Prove $\sin\theta \cot\theta = \cos\theta$.

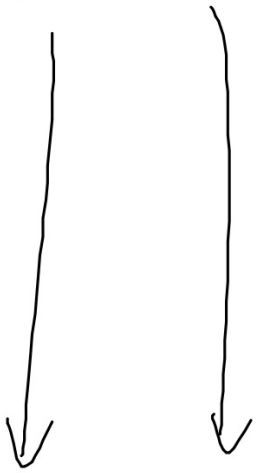
$\sin\theta \csc\theta$

1

2 pts

$\cos\theta = \cos\theta$

Prove $\tan x + \cos x = \sin x (\sec x + \cot x)$.



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

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

$= \tan x + \cos x.$

Prove $\dfrac{\cos^4 t - \sin^4 t}{\cos^2 t} = 1 - \tan^2 t.$

$$\frac{(\cos^2 t + \sin^2 t)(\cos^2 t - \sin^2 t)}{\cos^2 t}$$

$$\frac{\cos^2 t - \sin^2 t}{\cos^2 t}$$

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

$$1 - \tan^2 t =$$

You try...

Prove $\tan x + \cot x = \sec x \csc x$.

Prove $1+\cos\theta = \dfrac{\sin^2\theta}{1-\cos\theta}$

$\dfrac{1+\cos\theta}{1+\cos\theta}$

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

$= 1+\cos\theta$

Exit Ticket:

1. A plane flies at a bearing of N35°E for 250 km, it then changes bearings and flies directly east for 450 km. How far is the plane from where it started?

2. Solve the triangle for all possible solutions
A = 32° a = 6 c = 4

3) Simplify: $\frac{\sec^2\theta - 1}{\sin\theta}$