Names _____

Group Work 3: Proving Trig Identities

Verify each identity, showing each step explicitly. That means that at each step, you should be using *one* algebraic technique or *one* identity. You can either transform one side into the other, or transform both sides into the same simplified expression.

You will be graded on the *clarity and accuracy* of your work—i.e., is it both correct and easy to follow? **ADVICE: You may want to consider writing a draft on a separate page first.** Each problem is worth 6 points, for a total of 48 points.

1. $\frac{\cos u \sec u}{\tan u} = \cot u$

2. $\frac{1}{1-\sin^2 y} = 1 + \tan^2 y$

3. $\frac{1-\cos x}{\sin x} = \frac{\sin x}{1+\cos x}$

4. $\tan\theta + \cot\theta = \sec\theta \csc\theta$

5. $\frac{\sec x}{\sec x - \tan x} = \sec x\,(\sec x + \tan x)$

6. $\sin^4 \theta - \cos^4 \theta = 2\sin^2 \theta - 1$

7. $\frac{1}{\sec x+\tan x}+\frac{1}{\sec x-\tan x}=2\sec x$

8. $\frac{\cos^2 t+\tan^2 t-1}{\sin^2 t}=\tan^2 t$