Name: Key Date: _____ Hr: __

Homework 14.3 Day TWO Acc Geometry

Simplify the following:

1. $\tan\theta\cot\theta = 1$

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

$1 = 1$ $\boxed{= 1}$

2. $\sin\theta\cot\theta$

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

$\boxed{= \cos\theta}$

3. $2(\csc^2\theta - \cot^2\theta) = 2$

$2(1) = 2$ ✓

$\boxed{= 2}$

4. $3(\tan^2\theta - \sec^2\theta)$

$3(\tan^2\theta - (\tan^2\theta + 1))$

$3(\tan^2\theta - \tan^2\theta - 1)$

$3(0 - 1)$

$3(-1)$ $\boxed{= -3}$

Verifying Portion of HW

1. $\tan\theta(\cot\theta + \tan\theta) = \sec^2\theta$

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

$\frac{\sin\theta}{\cos\theta} \cdot \frac{\cos\theta}{\sin\theta} + \tan^2\theta = \sec^2\theta$

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

$\sec^2\theta = \sec^2\theta$ ✓

2. $\tan^2\theta\cos^2\theta = 1 - \cos^2\theta$

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

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

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

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

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

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

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

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

$1+\sin\theta = 1+\sin\theta$ ✓

4. $\dfrac{1+\tan^2\theta}{\csc^2\theta} = \tan^2\theta$

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

$\dfrac{\frac{1}{\cos^2\theta}}{\frac{1}{\sin^2\theta}} = \tan^2\theta$

$\dfrac{1}{\cos^2\theta}\cdot\dfrac{\sin^2\theta}{1} = \tan^2\theta$

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

$\tan^2\theta = \tan^2\theta$ ✓

skip 5 ☺

6. $\dfrac{\sec\theta+1}{\tan\theta} = \dfrac{\tan\theta}{\sec\theta-1}$

$(\sec\theta+1)(\sec\theta-1) = \tan^2\theta$

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

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

$\tan^2\theta = \tan^2\theta$ ✓

7. **STANDARDIZED TEST PRACTICE** Which expression can be used to form an identity with $\dfrac{\sec\theta+\csc\theta}{1+\tan\theta}$?

A $\sin\theta$ B $\cos\theta$ C $\tan\theta$ D $\csc\theta$

$\dfrac{\frac{1}{\cos\theta}+\frac{1}{\sin\theta}}{1+\tan\theta}$

$\dfrac{\sin\theta+\cos\theta}{\sin\theta\cos\theta} = \dfrac{\sin\theta+\cos\theta}{\sin\theta\cdot\cos\theta}\cdot\dfrac{1}{(1+\tan\theta)} = \dfrac{\sin\theta+\cos\theta}{\sin\theta\cos\theta+\tan\theta\sin\theta\cos\theta}$