

**WS5--Fundamental Verifications**

Name: \_\_\_\_\_

*Verify each identity. Show all steps.*

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

2.  $\csc^4 \theta - \cot^4 \theta = 2 \csc^2 \theta - 1$

3.  $\frac{\sec \theta}{\csc^2 \theta} = \sec \theta - \cos \theta$

4.  $\frac{1 + \tan^2 \theta}{\cos^2 \theta} = \sec^4 \theta$

5.  $\frac{(1 + \sin \theta)^2}{\cos^2 \theta} = \frac{1 + \sin \theta}{1 - \sin \theta}$

6.  $\frac{\csc^2 \theta}{\csc^2 \theta - 1} = \sec^2 \theta$

7.  $\frac{\cos \theta + \cot \theta}{\csc \theta + 1} = \cos \theta$

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

9.  $\frac{\cos \theta}{\sec \theta} + \frac{\cos \theta}{\sin \theta} = 2 \cot \theta$

10.  $\frac{\sec^2 \theta - \tan^2 \theta + \tan \theta}{\sec \theta} = \cos \theta + \sin \theta$

11.  $1 - \frac{\sin^2 \beta}{1 - \cos \beta} = -\cos \beta$

12.  $\frac{\tan x}{1 + \sec x} + \frac{1 + \sec x}{\tan x} = 2 \csc x$

13.  $\frac{\sin \alpha}{1 - \cos \alpha} = \frac{\sec \alpha}{\tan \alpha}$

14.  $\frac{\cos x}{1 - \sin x} = \tan x + \sec x$

15.  $\sqrt{\frac{1 - \cos \theta}{1 + \cos \theta}} = \frac{1 - \cos \theta}{\sin \theta}$