

## Practice 8.2:      Verifying Trig Identities

Verify the following Trig IDs. Show your work.

1.  $\sin t \csc t = 1$

2.  $\tan y \cot y = 1$

3.  $(1 + \sin \alpha)(1 - \sin \alpha) = \cos^2 \alpha$

4.  $\cot^2 x (\sec^2 x - 1) = 1$

5.  $\cos^2 \beta - \sin^2 \beta = 1 - 2\sin^2 \beta$

6.  $\cos^2 \beta - \sin^2 \beta = 2\cos^2 \beta - 1$

7.  $\tan^2 \theta + 4 = \sec^2 \theta + 3$

8.  $2 - \sec^2 z = 1 - \tan^2 z$

9.  $\sin^2 \alpha - \sin^4 \alpha = \cos^2 \alpha - \cos^4 \alpha$

10.  $\cos x + \sin x \tan x = \sec x$

$$11. \frac{\sec^2 \sigma}{\tan \sigma} = \sec \sigma \csc \sigma$$

$$12. \frac{\cot^3 \alpha}{\csc \alpha} = \cos \alpha - (\csc^2 \alpha - 1)$$

$$13. \frac{\cot^2 \mu}{\csc \mu} = \csc \mu - \sin \mu$$

$$14. \frac{1}{\sin x} - \sin x = \frac{\cos^2 x}{\sin x}$$

$$15. \sec^6 x (\sec x \tan x) - \sec^4 x (\sec x \tan x) = \sec^5 x \tan^3 x$$

$$16. \frac{1}{\sec x \tan x} = \csc x - \sin x$$

$$\text{Extra Credit: } \sin^{\frac{1}{2}} \phi \cos \phi - \sin^{\frac{5}{2}} \phi \cos \phi = \cos^3 \phi \sqrt{\sin \phi}$$