

**PreAP Precalculus**  
**5.2 Proving Trig Identities HW**

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

You must complete 1-11. 12-20 are extra and can be completed to help in preparation for the quiz/test. Use a separate sheet of paper to show your work and answers.

1.  $\sec x(\sec x - \cos x) = \tan^2 x$

2.  $\cos^4 t - \sin^4 t = 1 - 2\sin^2 t$

3.  $\cos^2 \theta + \tan^2 \theta \cos^2 \theta = 1$

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

5.  $\frac{\sin x}{1 - \cos x} + \frac{1 - \cos x}{\sin x} = 2\csc x$

6.  $\tan x \sin x = \sec x - \cos x$

7.  $\frac{1 - \cos x}{1 + \cos x} = (\cot x - \csc x)^2$

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

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

10.  $\frac{\sin x}{1 + \cos x} + \cot x = \csc x$

11.  $2\cos^3 x - \cos x = \frac{\cos^2 x - \sin^2 x}{\sec x}$

12.  $\sin x(\csc x - \sin x) = \cos^2 x$

13.  $\csc^2 \theta - \cos^2 \theta \csc^2 \theta = 1$

14.  $\frac{\sec x}{\sin x} - \frac{\sin x}{\cos x} = \cot x$

15.  $\frac{\sin \theta}{\csc \theta} + \frac{\cos \theta}{\sec \theta} = 1$

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

17.  $\frac{\cos x}{\sec x - 1} - \frac{\cos x}{\tan^2 x} = \cot^2 x$

18.  $\cot^2 A \csc^2 A - \cot^2 A = \cot^4 A$

19.  $\sin^3 z \cos^2 z = \sin^3 z - \sin^5 z$

20.  $\sec^2 \theta + \csc^2 \theta = \sec^2 \theta \csc^2 \theta$