

Name: _____

Trig Identities

Prove the identities. *Remember only work on one side!

1.) $\cot^2 x + 1 = \csc^2 x$

2.) $\tan x + \cot x = \sec x \csc x$

3.) $1 - 2 \cos^2 x = 2 \sin^2 x - 1$

4.) $\sin x (\sec x - \csc x) = \tan x - 1$

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

6.) $\frac{1 - \tan \theta}{1 + \tan \theta} = \frac{\cot \theta - 1}{\cot \theta + 1}$

7.) $\frac{\tan x + 1}{\cot x + 1} = \frac{\sec x}{\csc x}$

8.) $\tan x \sin x = \sec x - \cos x$

9.) $\frac{1}{1 + \sin x} + \frac{1}{1 - \sin x} = 2 \sec^2 x$

10.) $\frac{1 + \tan^2 x}{\tan^2 x} = \csc^2 x$

11.) $\frac{\sec x}{1 + \csc x} = \frac{\tan x}{1 + \sin x}$

12.) $\frac{1 + \sin x}{\cos x} + \frac{\cos x}{1 + \sin x} = 2 \sec x$

$$13.) \frac{\sin^2 x}{1-\cos x} = 1 + \cos x$$

$$14.) \frac{\sin x + \cos x}{\sec x + \csc x} = \frac{\cos x}{\csc x}$$

$$15.) \sin^4 x - \cos^4 x = \sin^2 x - \cos^2 x$$

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

$$17.) \frac{1+\cos x}{\sin x} = \csc x + \cot x$$

$$18.) \frac{\sec \theta \sin \theta}{\tan \theta + \cot \theta} = \sin^2 \theta$$

$$19.) \frac{\sec \theta}{\cos \theta} - \frac{\tan \theta}{\cot \theta} = 1$$

$$20.) \cos^2 x - \sin^2 x = 1 - 2 \sin^2 x$$

$$21.) \csc^2 x \tan^2 x - 1 = \tan^2 x$$

$$22.) \frac{\sec^2 \theta}{\sec^2 \theta - 1} = \csc^2 \theta$$

$$23.) \tan^2 x \sin^2 x = \tan^2 x - \sin^2 x$$

$$24.) \frac{\sec x + 1}{\tan x} = \frac{\tan x}{\sec x - 1}$$