

**Pre-Calculus Unit 4 REVIEW: Trigonometric Identities**

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Period: \_\_\_\_\_

In addition to the problems on Quiz 1 and 2, verify the following identities:

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

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

Find exact values of the following using Sum and Difference Identities:

3.)  $\sin \frac{13\pi}{12}$

4.)  $\cos \frac{-7\pi}{6}$

Simplify the following using Sum/Difference and Double-Angle Identities:

5.)  $2 \sin 135^\circ \cos 135^\circ$

6.)  $\cos^2 25^\circ - \sin^2 25^\circ$

7.)  $\sin 110^\circ \cos 40^\circ + \cos 110^\circ \sin 40^\circ$

8.)  $\cos 200^\circ \cos 25^\circ - \sin 200^\circ \sin 25^\circ$

Verify the following Identities:

9.)  $\tan x - \tan y = \frac{\sin(x-y)}{\cos x \cos y}$

10.)  $\cot \alpha - \tan \beta = \frac{\cos(\alpha + \beta)}{\sin \alpha \cos \beta}$

Continue verifying the following Identities:

$$11.) 2 \sin a \cos b = \sin(a + b) + \sin(a - b)$$

$$12.) \sin 2\theta = \frac{2 \tan \theta}{1 + \tan^2 \theta}$$

$$13.) \cos 2y = \frac{1 - \tan^2 y}{1 + \tan^2 y}$$

$$14.) \sin 2\beta = 2 \cot \beta \sin^2 \beta$$

$$15.) \tan \alpha = \frac{1 - \cos 2\alpha}{\sin 2\alpha}$$