

**PreCalc**  
**Unit 7 Review**

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

**Date:** \_\_\_\_\_

**Directions:** Follow the directions in each section. Show all of your work on a separate sheet of paper.

**I. Verify the following trigonometric identities.**

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

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

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

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

5.  $\sin \theta + \cos \theta = \frac{1 + \tan \theta}{\sec \theta}$

6.  $\frac{\cos \theta}{1 + \sin \theta} + \frac{\cos \theta}{1 - \sin \theta} = 2 \sec \theta$

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

**II. Solve the following trigonometric equation on the interval  $[0, 2\pi)$ .**

8.  $\sin^2 \theta = 2 \sin \theta + 3$

9.  $3 \tan^2 \theta = 1$

10.  $2 \sin \theta + \csc \theta = 0$

11.  $\cos \theta = 1 + 2 \sec \theta$

12.  $\csc^2 \theta - 2 = 0$

13.  $\cot \theta \cos^2 \theta - 2 \cot \theta = 0$

**III. Use the Sum and Difference Formulas to find the exact values of each trig expression.**

14.  $\sin 345^\circ$

15.  $\cos 285^\circ$

16.  $\tan -165^\circ$

17.  $\sin 70^\circ \cos 10^\circ - \cos 70^\circ \sin 10^\circ$

18.  $\cos 130^\circ \cos 80^\circ - \sin 130^\circ \sin 80^\circ$

**IV. Evaluate the following trig values if  $\cos x = 8/17$  in the 4<sup>th</sup> quadrant.**

19.  $\sin x$

20.  $\tan x$

21.  $\csc x$

22.  $\cos 2x$

23.  $\sin 2x$

24.  $\tan 2x$

**V. Use the Double Angle Formulas to solve each equation on the interval  $[0, 2\pi)$ .**

25.  $\cos 2x - 1 = \sin^2 x$

26.  $\frac{\cos 2x}{\cos^2 x} = 1$

**VI. Use the Double Angle Formulas to verify each identity.**

27.  $\cos 2x = \frac{1 - \tan^2 x}{1 + \tan^2 x}$

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