Pre-Calculus/Trig 3
Verifying Identities Worksheet

Name _____
Date _____ Block _____

Directions: Verify each trigonometric identity. Complete all work on a separate piece of paper.

1) $\cos^3\theta + \sin^2\theta\cos\theta = \cos\theta$

2) $\csc^2\theta - \cos^2\theta\csc^2\theta = 1$

3) $\sec\theta\sin\theta = \tan\theta$

4) $\frac{\csc\theta}{\sec\theta} = \cot\theta$

5) $\frac{\sec^2\theta-1}{\tan\theta} = \tan\theta$

6) $\frac{\cot\theta}{\csc^2\theta-1} = \tan\theta$

7) $\sec\theta\sin\theta\cot\theta = 1$

8) $\cot\theta\csc\theta\tan^2\theta = \sec\theta$

9) $\cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1$

10) $\cos^2\theta - \sin^2\theta = 1 - 2\sin^2\theta$

11) $\cot\theta\sin\theta = \cos\theta$

12) $\frac{\tan\theta}{\sec\theta} = \sin\theta$

13) $\sin\theta(1+\csc\theta) = \sin\theta + 1$

14) $(1+\tan\theta)^2 = \sec^2\theta + 2\tan\theta$

15) $(1+\tan^2\theta)\cos^2\theta = 1$

16) $\cos\theta = \sec\theta - \sin\theta\tan\theta$

17) $(\sec\theta+\tan\theta)(\sec\theta-\tan\theta) = 1$

18) $\frac{\sec\theta}{\csc^2\theta} = \sec\theta - \cos\theta$

19) $\frac{1-2\csc\theta}{\cot\theta} = \tan\theta - 2\sec\theta$

20) $\frac{\sec^2\theta-1}{\tan\theta} = \tan\theta$

21) $\sin\theta + \cos\theta\cot\theta = \csc\theta$

22) $\cos\theta(\csc\theta - \sec\theta) = \cot\theta - 1$

23) $\frac{\cos\theta}{1-\sin^2\theta} = \sec\theta$

24) $\tan^2\theta - \tan^2\theta\sin^2\theta = \sin^2\theta$

25) $\frac{\cot\theta}{1+\cot^2\theta} = \sin\theta\cos\theta$

26) $\frac{1+\tan^2\theta}{\cos^2\theta} = \sec^4\theta$

27) $\frac{\sin\theta+\cos\theta}{\sin\theta\cos\theta} = \sec\theta + \csc\theta$

28) $\frac{\sec\theta+\tan\theta}{\cos\theta+\cot\theta} = \sin\theta\sec^2\theta$

29) $\frac{(1+\sin\theta)^2}{\cos^2\theta} = \frac{1+\sin\theta}{1-\sin\theta}$

30) $\frac{1+\sec\theta}{\tan\theta+\sin\theta} = \csc\theta$

31) $\csc\theta\cos^2\theta + \sin\theta = \csc\theta$

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

33) $\sin\theta\left(\frac{\cot\theta}{\sec\theta} + \csc\theta\right) = \cos^2\theta + 1$

34) $\frac{2\cos^2\theta-\sin^2\theta+1}{\cos\theta} = 3\cos\theta$

35) $\csc\theta - \sin\theta = \cot\theta\cos\theta$

36) $\frac{1}{1-\cos\theta} + \frac{1}{1+\cos\theta} = 2\csc^2\theta$

Extra Practice

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

2) $\frac{\cos\theta+\tan\theta}{\sin\theta} = \sec\theta + \cot\theta$

3) $\csc^4\theta - \cot^4\theta = 2\csc^2\theta - 1$

4) $\frac{\cos\theta+\cot\theta}{\csc\theta+1} = \cos\theta$

5) $\frac{1+\sec\theta}{\tan\theta+\sin\theta} = \csc\theta$

6) $\frac{2-\sec^2\theta}{\sec\theta} = \frac{1-2\sin^2\theta}{\cos\theta}$

7) $\frac{1}{\sec\theta-\tan\theta} = \sec\theta + \tan\theta$

8) $1 + \cos\theta = \cot\theta\,(\sin\theta + \tan\theta)$

9) $1 - \sin\theta = \tan\theta\,(\cot\theta - \cos\theta)$

10) $\frac{\tan\theta}{1+\tan^2\theta} = \sin\theta\cos\theta$

11) $(\sec\theta - \tan\theta)^2 = \frac{1-\sin\theta}{1+\sin\theta}$

12) $\sqrt{\frac{1-\cos\theta}{1+\cos\theta}} = \frac{1-\cos\theta}{\sin\theta}$

13) $\sqrt{\frac{\sec\theta+\tan\theta}{\sec\theta-\tan\theta}} = \frac{1+\sin\theta}{\cos\theta}$

14) $\sin^4\theta - \cos^4\theta = 1 - 2\cos^2\theta$

15) $\sin^2\theta\left(\frac{\csc^2\theta-1}{\cos^2\theta} - \cot^2\theta\right) = \sin^2\theta$

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