Chapter 6 Assignment

Name:_____

Date:_____

Block:____

1. Simplify the following:

(a) $\dfrac{\csc^2\theta - 2}{\csc^2\theta}$

(b) $\cot^2 x \sin^2 x + \cos^2 x$

(c) $\dfrac{\sec\theta - \cos\theta}{\csc\theta - \sin\theta}$

(d) $\dfrac{2\tan x}{\cos^2 x + \sin^2 x + \tan^2 x}$

2. Express $2\cos^2 4x - 2\sin^2 4x$ as a single trigonometric function.

3. Simplify the following:

   (a) $\cos(\alpha + 90°)$

   (b) $\sin(\frac{\pi}{2} - \theta)$

4. If $\sin\theta = a$ and $0 < \theta < \frac{\pi}{2}$, determine an expression for $\cos(\pi + \theta)$.

5. If $\sec\theta = \frac{-13}{5}$ and $\frac{\pi}{2} < \theta < \pi$, determine an expression for $\sin(\theta - \pi)$.

6. Solve the following, accurate to 2 decimal places, for $0 \le \theta < 2\pi$

$2\sec^2 x + 5\sec x - 3 = 0$

7. Solve for all possible solutions in radians

$\sin 2x = 2\sin x$

8. Prove the following identities.

(a) $\dfrac{\sin 2\theta}{2-2\cos^2\theta} = \cot\theta$

(b) $\dfrac{\cos\theta}{1-\sin\theta} = \sec\theta + \tan\theta$

(c) $\tan^2 x - \sin^2 x = \tan^2 x \sin^2 x$

(d) $\dfrac{(\sin\theta + \cos\theta)^2}{\sin 2\theta} = \csc 2\theta + 1$

9. State all the restrictions for the following:

(a) $\dfrac{\cot\theta}{1-\sin\theta}$

(b) $\dfrac{\csc\theta}{\cos\theta}$

10. State the restrictions for $\frac{\sec\theta}{4\sin^2\theta - 1}$ if $0 \le \theta < 2\pi$.

11. Verify $\sin\theta + \cos\theta\cot\theta = \csc\theta$ for $\theta = 30°$.