Trig Identities Quiz Review WS #2

Reciprocal Identities:

$\sin\theta = \frac{1}{\csc\theta}$ $\quad \cos\theta = \frac{1}{\sec\theta}$ $\quad \tan\theta = \frac{1}{\cot\theta}$

$\csc\theta = \frac{1}{\sin\theta}$ $\quad \sec\theta = \frac{1}{\cos\theta}$ $\quad \cot\theta = \frac{1}{\tan\theta}$

Quotient Identities:

$\tan\theta = \frac{\sin\theta}{\cos\theta}$ $\quad \cot\theta = \frac{\cos\theta}{\sin\theta}$

Pythagorean Identities: $\sin^2\theta + \cos^2\theta = 1$ $\quad \tan^2\theta + 1 = \sec^2\theta$ $\quad 1 + \cot^2\theta = \csc^2\theta$

Verify the Identity

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

2) $\frac{1+\cos x}{\sin x} + \frac{\sin x}{1+\cos x} = 2\csc x$

3) $(\cot^2 x + 1)(\sin^2 x - 1) = -\cot^2 x$

4) $\frac{\sin^2\theta - 2\sin\theta + 1}{\sin\theta - 1} = \sin\theta - 1$

5) $\dfrac{\csc x - \cot x}{\sec x - 1} = \cot x$

6) $\sin^2\theta(1 + \cot^2\theta) = 1$

7) $\dfrac{1+\sec^2\theta}{\sec^2\theta} = 1 + \cos^2\theta$

8) $\dfrac{\tan\theta}{\sec\theta} + \dfrac{\cot\theta}{\csc\theta} = \sin\theta + \cos\theta$