Verifying Trigonometric Identities **Name:** _____ **Date:**_____

1. $\frac{sec^2\theta-1}{sec^2\theta} = sin^2\theta$

$\frac{\tan^2\theta}{\sec^2\theta} = \frac{\sin^2\theta}{\cos^2\theta} \cdot \frac{1}{\sec^2\theta} =$

$\frac{\sin^2\theta}{\cancel{\cos^2\theta}} \cdot \frac{\cancel{\cos^2\theta}}{1} = \sin^2\theta$ ✓

2. $\sec\beta\cos\beta = 1$

$\frac{1}{\cos\beta} \cdot \frac{\cos\beta}{1} = \frac{\cos\beta}{\cos\beta} = 1$ ✓

3. $2 - sec^2\theta = 1 - tan^2\theta$

$2-(1+\tan^2\theta) =$

$2-1-\tan^2\theta =$

$1-\tan^2\theta$ ✓

4. $cos^2\beta - sin^2\beta = 1 - 2sin^2\beta$

$1-\sin^2\beta - \sin^2\beta =$

$1-2\sin^2\beta$ ✓

5. $\frac{csc^2\theta}{cot\theta} = csc\theta sec\theta$

$\csc^2\theta \cdot \tan\theta =$

$\frac{1}{\sin^2\theta} \cdot \frac{\cancel{\sin\theta}}{\cos\theta} =$

$\frac{1}{\sin\theta} \cdot \frac{1}{\cos\theta} =$

$\csc\theta \sec\theta$ ✓

6. $\frac{1}{1-sin\alpha} + \frac{1}{1+sin\alpha} = 2sec^2\alpha$

$\frac{1+1+\sin\alpha + 1-\sin\alpha}{1-\sin^2\alpha} = \frac{2}{1-\sin^2\alpha} =$

$\frac{2}{\cos^2\alpha} = 2\sec^2\alpha$ ✓

7. $tan^2\beta sin^2\beta = tan^2\beta - sin^2\beta$

$\tan^2\beta(1-\cos^2\beta) =$

$\tan^2\beta - \tan^2\beta\cos^2\beta =$

$\tan^2\beta - \frac{\sin^2\beta}{\cancel{\cos^2\beta}} \cdot \frac{\cancel{\cos^2\beta}}{1} =$

$\tan^2\beta - \sin^2\beta$ ✓

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

$\frac{\tan^2\theta}{\sec^2\theta} = \frac{\sin^2\theta}{\cancel{\cos^2\theta}} \cdot \frac{\cancel{\cos^2\theta}}{1} =$

$\sin^2\theta$

9. $(sin\alpha + cos\alpha)^2 + (sin\alpha - cos\alpha)^2 = 2$

$\sin^2\alpha + \cancel{2\sin\alpha\cos\alpha} + \cos^2\alpha + \sin^2\alpha \cancel{-2\sin\alpha\cos\alpha} + \cos^2\alpha$

$2(\sin^2\alpha + \cos^2\alpha) = 2(1) = 2$

10. $cos^3\theta + sin^2\theta cos\theta = cos\theta$

$\cos\theta(\cos^2\theta + \sin^2\theta) =$

$\cos\theta(1) = \cos\theta$