NAME _____ DATE _____ PERIOD _____

Practice

Verifying Trigonometric Identities

Verify that each equation is an identity.

1. $\frac{\csc x}{\cot x + \tan x} = \cos x$

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

3. $\sin^3 x - \cos^3 x = (1 + \sin x \cos x)(\sin x - \cos x)$

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

Find a numerical value of one trigonometric function of x.

5. $\sin x \cot x = 1$

6. $\sin x = 3 \cos x$

7. $\cos x = \cot x$

8. ***Physics*** The work done in moving an object is given by the formula $W = Fd \cos \theta$, where d is the displacement, F is the force exerted, and θ is the angle between the displacement and the force. Verify that $W = Fd \frac{\cot \theta}{\csc \theta}$ is an equivalent formula.