

## LESSON

**Practice B****14-3 Fundamental Trigonometric Identities**

Prove each trigonometric identity.

1.  $\sin^2 \theta + \sin^2 \theta \cot^2 \theta = 1$

2.  $\cot^2 \theta \cos^2 \theta = \cot^2 \theta - \cos^2 \theta$

3.  $\tan^2 \theta - \tan^2 \theta \sin^2 \theta = \sin^2 \theta$

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

Rewrite each expression in terms of  $\cos \theta$ . Then simplify.

5.  $2 \sin \theta \cos \theta \cot \theta$

6.  $\frac{1 + \cot \theta}{\cot \theta (\sin \theta + \cos \theta)}$

7.  $\cos^4 \theta - \sin^4 \theta + \sin^2 \theta$

Solve.

8. Use the equation
- $mg \sin \theta = \mu mg \cos \theta$
- to determine the angle at which a waxed wood block on an inclined plane of wet snow begins to slide. Assume
- $\mu = 0.17$
- .