

FER#5—Trig. Identities

Verify each Identity by manipulating the left side of the equation until it matches the right side.

$$1) \sec\theta \cdot \sin\theta = \tan\theta$$

$$2) \sin\theta(\cot\theta + \tan\theta) = \sec\theta$$

$$3) 3\sin^2\theta + 4\cos^2\theta = 3 + \cos^2\theta$$

$$4) \frac{\sec\theta - \csc\theta}{\sec\theta \csc\theta} = \sin\theta - \cos\theta$$

$$5) \frac{\sec\theta - \cos\theta}{\sec\theta + \cos\theta} = \frac{\sin^2\theta}{1 + \cos^2\theta}$$

$$6) \frac{1 + \sin\theta}{1 - \sin\theta} = (\sec\theta + \tan\theta)^2$$

Write in the rule or reason for each step in the following proof:

$$7) \sec\theta - \cos\theta = \tan\theta \sin\theta \quad \text{Given}$$

$$\frac{1}{\cos\theta} - \cos\theta$$

$$\frac{1 - \cos^2\theta}{\cos\theta}$$

$$\frac{\sin^2\theta}{\cos\theta}$$

$$\frac{\sin\theta \sin\theta}{\cos\theta}$$

$$\tan\theta \sin\theta$$

Write a proof for the following Identity:

$$8) \frac{1 + \cos^2\theta}{\sin^2\theta} = 2\csc^2\theta - 1$$