

ESTABLISH THE FOLLOWING IDENTITIES:

$$1) \sec \theta \cot \theta = \csc \theta$$

$$2) \sin \theta \sec \theta = \tan \theta$$

$$3) \cot \theta + \tan \theta = \sec \theta \csc \theta$$

$$4) \sec^2 \theta - \csc^2 \theta = \tan^2 \theta - \cot^2 \theta$$

$$5) \sin^2 \theta \cot^2 \theta + \cos^2 \theta \tan^2 \theta = 1$$

$$6) \sin \theta \cot \theta = \cos \theta$$

$$7) \frac{\sin \theta}{\tan \theta} = \cos \theta$$

$$8) \sec \theta - \cos \theta = \sin \theta \tan \theta$$

$$9) (1 - \cos \theta)(1 + \cos \theta) = \sin^2 \theta$$

$$10) \cos \theta (\sec \theta + \cos \theta \csc^2 \theta) = \csc^2 \theta$$

$$11) \frac{1 + \tan^2 \theta}{\csc^2 \theta} = \tan^2 \theta$$

$$12) \frac{\sec \theta}{\sin \theta} - \frac{\sin \theta}{\cos \theta} = \cot \theta$$

$$13) \frac{\tan \theta}{\csc \theta} + \frac{\sin \theta}{\tan \theta} = \sec \theta$$