

III. Ratio Identities

$$10.) \quad \tan\theta = \frac{\sin\theta}{\cos\theta}$$

$$11.) \quad \cot\theta = \frac{\cos\theta}{\sin\theta}$$

IV. Pythagorean Identities

$$12.) \quad \sin^2\theta + \cos^2\theta = 1$$

$$13.) \quad \sin^2\theta = 1 - \cos^2\theta$$

$$14.) \quad \cos^2\theta = 1 - \sin^2\theta$$

$$15.) \quad 1 - \cot^2\theta = \csc^2\theta$$

$$16.) \quad \cot^2\theta = \csc^2\theta - 1$$

$$17.) \quad \csc^2\theta - \cot^2\theta = 1$$

$$18.) \quad \tan^2\theta + 1 = \sec^2\theta$$

$$19.) \quad \tan^2\theta = \sec^2\theta - 1$$

$$20.) \quad \sec^2\theta - \tan^2\theta = 1$$