$$\sin^2 x + \cos^2 x = 1 \quad \rightarrow \quad \sin^2 x = 1 - \cos^2 x$$

$$\cos^2 x = 1 - \sin^2 x$$

$$\sin 2x = 2 \sin x \cos x$$

$$\cos 2x = 2\cos^2 x - 1$$

$$= 1 - 2\sin^2 x$$

$$= \cos^2 x - \sin^2 x$$

$$\tan^2 x = \sec^2 x - 1 \quad \rightarrow \quad \sec^2 x = \tan^2 x + 1$$

$$\cot^2 x = \csc^2 x - 1 \quad \rightarrow \quad \csc^2 x = \cot^2 x + 1$$

$$\sin^2 x = \frac{1 - \cos 2x}{2} = \frac{1}{2}(1 - \cos 2x)$$

$$\cos^2 x = \frac{1 + \cos 2x}{2} = \frac{1}{2}(1 + \cos 2x)$$

$$\tan x = \frac{\sin x}{\cos x} \quad , \quad \cot x = \frac{\cos x}{\sin x}$$

$$\csc x = \frac{1}{\sin x} \quad , \quad \sec x = \frac{1}{\cos x}$$