A. Reciprocal

$\csc = \frac{1}{\sin}$ $\quad \sin \csc = 1$

$\cos \sec = 1$

$\sec = \frac{1}{\cos}$ $\quad \tan \cot = 1$

$\cot = \frac{1}{\tan}$

$\sin = \frac{1}{\csc}$

$\cos = \frac{1}{\sec}$

$\tan = \frac{1}{\cot}$

B. Ratio

$\tan = \frac{\sin}{\cos}$

$\cot = \frac{\cos}{\sin}$

$\cos = \frac{\sin}{\tan}$

$\sin = \frac{\cos}{\cot}$

$\sin = \cos \tan$

$\cos = \sin \cot$

C. Pythagorean

$\sin^2 + \cos^2 = 1$

$\tan^2 + 1 = \sec^2$

$1 + \cot^2 = \csc^2$

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

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

$\sec^2 - 1 = \tan^2$

$\sec^2 - \tan^2 = 1$

$\csc^2 - 1 = \cot^2$

$\csc^2 - \cot^2 = 1$