

C12 - 6.3 - Proofs Pythag Reciprocal Fractions Notes

$$\begin{array}{l} \tan x \csc x = \sec x \\ \left(\frac{\sin x}{\cos x}\right)\left(\frac{1}{\sin x}\right) \\ \frac{1}{\cos x} \\ \sec x \end{array} \quad \checkmark$$

$$\begin{array}{l} \frac{\cot x}{\csc x} = \cos x \\ \frac{\left(\frac{\cos x}{\sin x}\right)}{\left(\frac{1}{\sin x}\right)} \\ \frac{\cos x}{\sin x} \times \frac{\sin x}{1} \\ \cos x \end{array} \quad \checkmark$$

$$\begin{array}{l} 1 + \tan^2 x = \sec^2 x \\ 1 + \frac{\sin^2 x}{\cos^2 x} \\ \frac{\cos^2 x}{\cos^2 x} + \frac{\sin^2 x}{\cos^2 x} \\ \frac{\cos^2 x + \sin^2 x}{\cos^2 x} \\ \frac{1}{\cos^2 x} \end{array} \quad \checkmark$$

$$\begin{array}{l} \csc x \cos^2 x + \sin x = \csc x \\ \frac{1}{\sin x} \times \cos^2 x + \sin x \\ \frac{\cos^2 x}{\sin x} + \sin x \times \frac{\sin x}{\sin x} \\ \frac{\cos^2 x}{\sin x} + \frac{\sin^2 x}{\sin x} \\ \frac{\cos^2 x + \sin^2 x}{\sin x} \\ \frac{1}{\sin x} \end{array} \quad \checkmark$$

$$\begin{array}{l} \cot x + \tan x = \csc x \sec x \\ \frac{\cos x}{\sin x} + \frac{\sin x}{\cos x} \\ \frac{\cos^2 x + \sin^2 x}{\sin x \cos x} \\ \frac{1}{\sin x \cos x} \\ \left(\frac{1}{\sin x}\right)\left(\frac{1}{\cos x}\right) \\ \csc x \sec x \end{array} \quad \checkmark$$

$$\begin{array}{l} \frac{1 + \cos x}{1 + \sec x} = \cos x \\ \frac{(1 + \cos x)}{\left(1 + \frac{1}{\cos x}\right)} \\ \frac{(1 + \cos x)}{\left(\frac{\cos x + 1}{\cos x}\right)} \\ (1 + \cos x) \times \frac{\cos x}{\cos x + 1} \\ \frac{\cos x(1 + \cos x)}{\cos x + 1} \\ \cos x \end{array} \quad \checkmark$$