

C12 - 6.1 - Ratios *cscx secx cotx* Notes

$$\frac{\sin x}{\sin x} = 1 \quad \frac{\sin^2 x}{\sin x} = \sin x \quad \frac{\sin^3 x}{\sin x} = \sin^2 x$$

$$\frac{\cos x}{\cos x} = 1 \quad \frac{\cos^2 x}{\cos x} = \cos x \quad \frac{\cos^3 x}{\cos^2 x} = \cos x$$

$\sin^2 x = (\sin x)(\sin x) \neq \sin x^2$
 $\cos^2 x = (\cos x)(\cos x) \neq \cos x^2$

$$\frac{\sin x}{1} \times \frac{1}{\cos x} = \frac{\sin x}{\cos x} = \tan x$$

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

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

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

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

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

$= \frac{\sin^2 x}{\cos x}$

$= \sin x$

$$\frac{\sin x}{\tan x} = \frac{\sin x}{\frac{\sin x}{\cos x}} = \sin x \div \frac{\sin x}{\cos x} = \sin x \times \frac{\cos x}{\sin x} = \cos x$$

$$\frac{\cos x}{\tan x} = \frac{\cos x}{\frac{\sin x}{\cos x}} = \cos x \div \frac{\sin x}{\cos x} = \cos x \times \frac{\cos x}{\sin x} = \frac{\cos^2 x}{\sin x}$$

$$\frac{\tan x}{\cos x} = \frac{\frac{\sin x}{\cos x}}{\cos x} = \frac{\sin x}{\cos x} \div \cos x = \frac{\sin x}{\cos x} \times \frac{1}{\cos x} = \frac{\sin x}{\cos^2 x}$$

$$\frac{\tan x}{\sin x} = \frac{\frac{\sin x}{\cos x}}{\sin x} = \frac{\sin x}{\cos x} \div \sin x = \frac{\sin x}{\cos x} \times \frac{1}{\sin x} = \frac{1}{\cos x} = \sec x$$

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

Flip and Multiply

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

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

$$\sec x \sin x = \frac{1}{\cos x} \times \sin x = \frac{\sin x}{\cos x} = \tan x$$

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

$$\sec x \tan x = \frac{1}{\cos x} \times \frac{\sin x}{\cos x} = \frac{\sin x}{\cos^2 x}$$

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

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

$$\csc x \cos x = \frac{1}{\sin x} \times \cos x = \frac{\cos x}{\sin x} = \cot x$$

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

$$\csc x \tan x = \frac{1}{\sin x} \times \frac{\sin x}{\cos x} = \frac{1}{\cos x} = \sec x$$

$= \sec x$