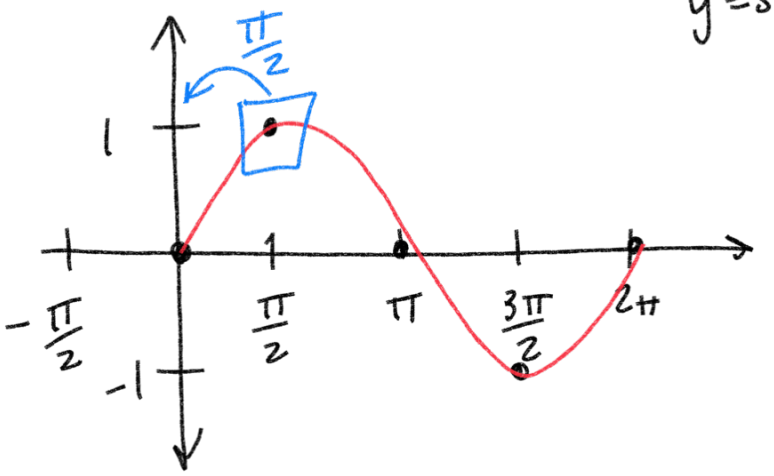
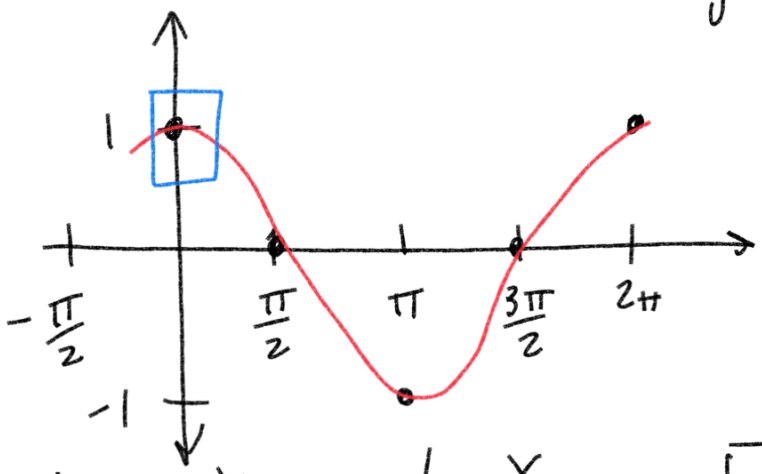
MTH-PT Trigonometry Session 17 3/23

$y = \sin x$




$$\sin\left(x + \frac{\pi}{2}\right) = \cos x$$

$y = \cos x$




$$\frac{\tan x - \cot x}{\tan x + \cot x} = \sin^2 x - \cos^2 x$$

$$\frac{4}{4}\cdot\frac{1}{3} - \frac{1}{4}\cdot\frac{3}{3}$$

$$\frac{\frac{\sin x}{\cos x} - \frac{\cos x}{\sin x}}{\frac{\sin x}{\cos x} + \frac{\cos x}{\sin x}}$$

$$\frac{\frac{\sin^2 x}{\sin x \cos x} - \frac{\cos^2 x}{\sin x \cos x}}{\frac{\sin^2 x}{\sin x \cos x} + \frac{\cos^2 x}{\sin x \cos x}}$$

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

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

$$\frac{\sin x + 1}{\sin x} = \frac{\cot^2 x}{1 - \csc x}$$

1.) $\sin/\cos$

2.) $\sin^2 x + \cos^2 x = 1$

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

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

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

$-\sin^2 x \quad -\sin^2 x$

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

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

$$\cos^2 x = (1 - \sin x)(1 + \sin x)$$

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

$$\frac{-\sin x}{\sin x - 1}$$

$$\frac{-(1 - \sin x)(1 + \sin x)}{\sin x}$$

$$\frac{\sin x}{\sin x - 1}$$

$$\frac{1}{3} \div \frac{2}{3} = \frac{1}{6}$$

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

$$\frac{-(1 - \sin x)(1 + \sin x)}{(\sin x)(\sin x - 1)}$$

$$\frac{(\sin x - 1)(\sin x + 1)}{(\sin x)(\sin x - 1)} = \frac{\sin x + 1}{\sin x}$$

$$\frac{\sec x + \tan x}{\csc x + 1} = \tan x$$

1.) $\sin/\cos$

2.) $\sin^2 x + \cos^2 x = 1$

$$\frac{\frac{1}{\cos x} + \frac{\sin x}{\cos x}}{\frac{1}{\sin x} + 1} = \frac{\sin x}{\cos x}$$

$$\frac{\frac{1+\sin x}{\cos x}}{\frac{1}{\sin x} + 1} = \frac{\frac{1+\sin x}{\cos x}}{\left\{\frac{1}{\sin x} + \frac{\sin x}{\sin x}\right\}}$$

$$\frac{1+\sin x}{\cos x} \div \left\{\frac{1+\sin x}{\sin x}\right\} = \frac{\frac{1+\sin x}{\cos x}}{\frac{1+\sin x}{\sin x}}$$

Keep, change, flip!

$$\frac{1+\sin x}{\cos x} * \frac{\sin x}{1+\sin x} = \frac{\sin x}{\cos x}$$

$$\cos^2 x\left(1+\cot^2 x\right)=\frac{\csc x}{(\sec x)(\tan x)}$$

$$\cos^2 x\left(\boxed{1}+\frac{\cos^2 x}{\sin^2 x}\right)=\frac{1}{\sin x}$$

$$\cos^2 x\left(\frac{\sin^2 x+\cos^2 x}{\sin^2 x}\right)$$

$$\cos^2 x\left(\frac{1}{\sin^2 x}\right)$$

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

$$\left(\frac{1}{\cos x}\right)\left(\frac{\sin x}{\cos x}\right)$$

$$\frac{1}{\frac{\sin x}{\cos^2 x}}$$

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

$$\frac{1}{\sin x}*\frac{\cos^2 x}{\sin x}$$

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