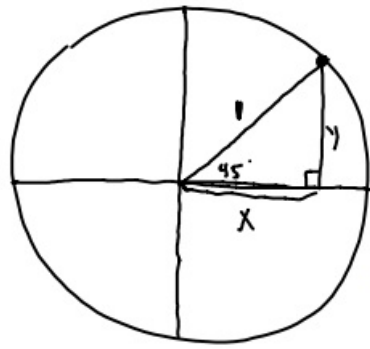


4-11-18 1st Trig



$$x^2 + y^2 = 1$$

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

$$\left(\frac{\sqrt{2}}{2}\right)^2 + \left(\frac{\sqrt{2}}{2}\right)^2 = 1$$

$$\frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2} = \frac{2}{4} = \frac{1}{2}$$

$$\frac{1}{2} + \frac{1}{2} = 1$$

$$\begin{array}{r} \cos^2 \theta + \sin^2 \theta = 1 \\ - \sin^2 \theta \quad - \sin^2 \theta \\ \hline \end{array}$$

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

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

Proofs

① Simplify

$$\begin{array}{ccc} \tan x \cdot \csc x \cdot \cos x & & \\ \downarrow & \downarrow & \downarrow \\ \frac{\cancel{\sin x}}{\cancel{\cos x}} \cdot \frac{1}{\cancel{\sin x}} \cdot \frac{\cancel{\cos x}}{1} & & \\ & & 1 \end{array}$$

$$\textcircled{2} \quad \frac{\tan x \cdot \csc x}{\sec x}$$

$$\frac{\frac{\cancel{\sin x}}{\cos x} \cdot \frac{1}{\cancel{\sin x}}}{\frac{1}{\cos x}}$$

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

$$\textcircled{3} \quad \frac{\tan x}{\cot x}$$

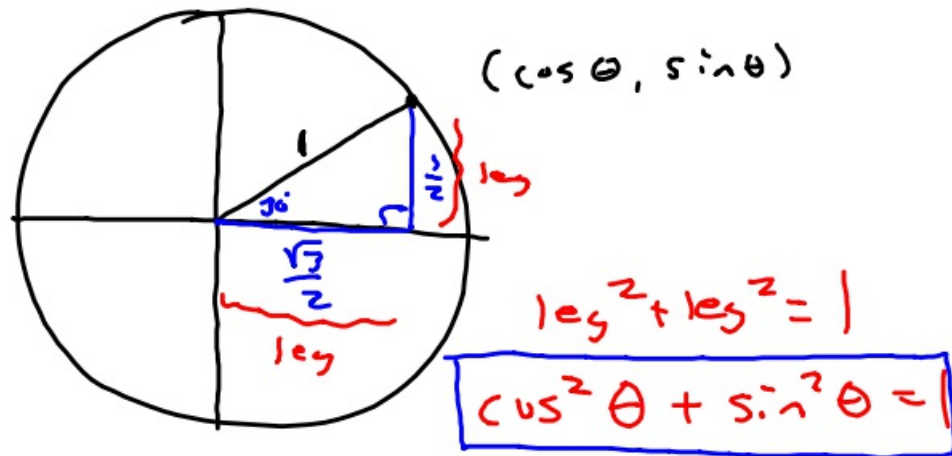
$$\frac{\frac{\sin x}{\cos x}}{\frac{\cos x}{\sin x}}$$

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

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

$$\tan^2 x$$

4-11-18 3rd Trig



$$\cos^2 \theta + \sin^2 \theta = 1$$
$$- \sin^2 \theta \quad - \sin^2 \theta$$

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

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

Proofs

① $\tan x \cdot \csc x \cdot \cos x$

$$\begin{array}{ccc} \downarrow & \downarrow & \downarrow \\ \frac{\cancel{\sin x}}{\cancel{\cos x}} \cdot \frac{1}{\cancel{\sin x}} \cdot \frac{\cancel{\cos x}}{1} \end{array}$$

1

$$\textcircled{2} \quad \frac{\tan x \cdot \csc x}{\sec x}$$

$$\frac{\frac{\cancel{\sin x}}{\cos x} \cdot \frac{1}{\cancel{\sin x}}}{\frac{1}{\cos x}}$$
$$\frac{\frac{1}{\cos x}}{\frac{1}{\cos x}} = 1$$

$$\textcircled{3} \quad \frac{\tan x}{\cot x}$$

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

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

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

$$\tan^2 x$$

