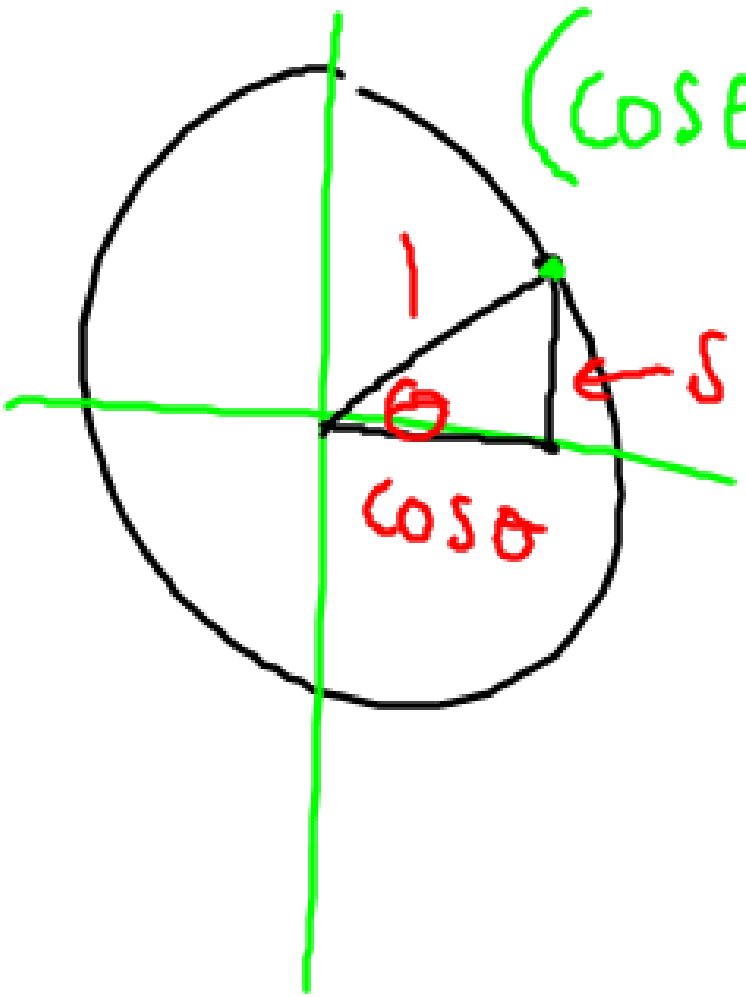
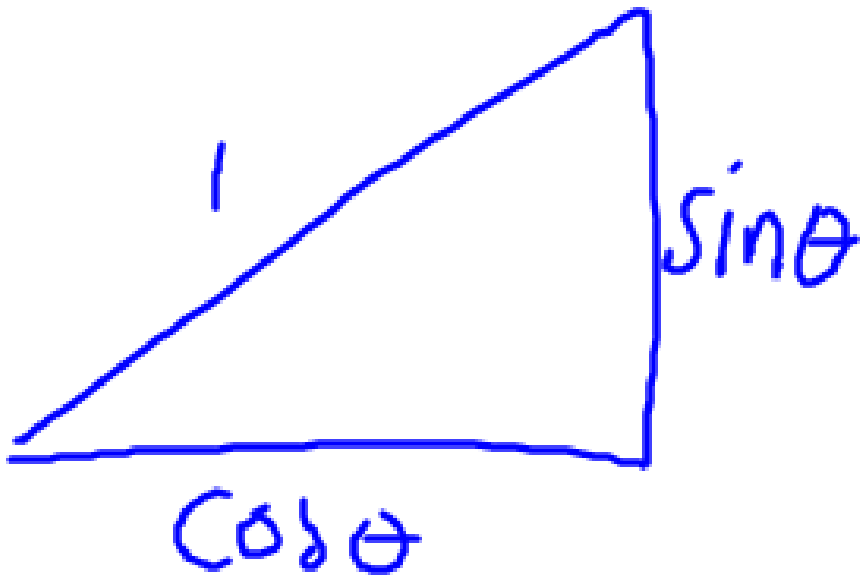
$$\sin x = \frac{1}{\csc x}$$

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





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

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

① $\cos^2\theta + \sin^2\theta = 1$

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

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

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

(2)

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

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

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

(3) $\cot^2\theta + 1 = \csc^2\theta$

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

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

① Prove:

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

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

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

∴

∎

(4) $\dfrac{\cot x}{\sec x} = \csc x - \sin x$

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