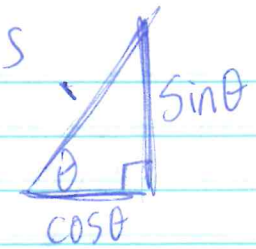
Quotient Identities

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

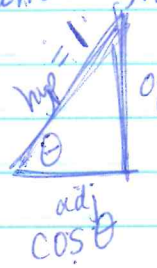


$\tan = \frac{opp}{hyp} = \frac{\sin\theta}{\cos\theta}$

$\cot\theta = \frac{\cos\theta}{\sin\theta}$ $\quad \cot\theta = \frac{1}{\tan\theta} = \frac{\cos\theta}{\sin\theta}$

Pythagorean Identities

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



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

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

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

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

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

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

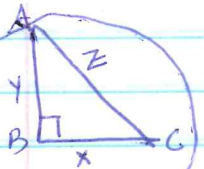
but $1 = \sin^2\theta + \cos^2\theta$

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

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

Cofunction identities

based on the idea that: $\sin C = \cos A$ $\quad \frac{y}{z} = \frac{y}{z}$



$\sin\theta = \cos(90 - \theta)$

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

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

$\csc x = \sec\left(\frac{\pi}{2} - x\right)$ $\quad \tan x = \cot\left(\frac{\pi}{2} - x\right)$

$\sec x = \csc\left(\frac{\pi}{2} - x\right)$ $\quad \cot x = \tan\left(\frac{\pi}{2} - x\right)$

$\sin(-t) = -\sin(t)$ $\quad \csc(-t) = -\csc(t)$ $\quad \tan(-t) = -\tan(t)$

$\cos(-t) = \cos(t)$ $\quad \sec(-t) = \sec(t)$