

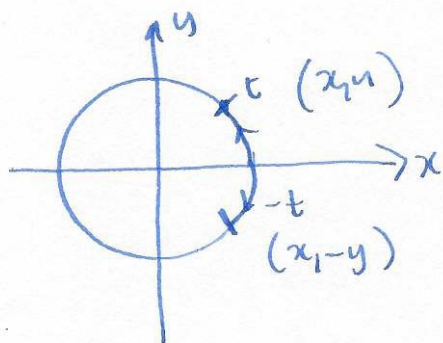
non-special values: $\sin(0.312) \leftarrow$ use your calculator.

Even-odd properties

recall: a function $f(x)$ is even if $f(-x) = f(x)$
odd if $f(-x) = -f(x)$

even: cosine secant $\cos(x)$, $\sec(x)$

odd: $\sin(x)$, $\tan(x)$, $\csc(x)$, $\cot(x)$.



$$\sin(-t) = -y = -\sin(t) \quad \text{odd}$$

$$\cos(-t) = x = \cos(t) \quad \text{even}$$

$$\tan(-t) = \frac{\sin(-t)}{\cos(-t)} = \frac{-\sin(t)}{\cos(t)} = -\tan(t) \quad \text{odd.}$$

similarly

$$\csc(t) = \frac{1}{\sin(-t)} = \frac{1}{-\sin(t)} = -\csc(t) \quad \text{odd}$$

$$\sec(t) = \frac{1}{\cos(-t)} = \frac{1}{\cos(t)} = \sec(t) \quad \text{even}$$

$$\cot(t) = \frac{\cos(t)}{\sin(-t)} = \frac{\cos(t)}{-\sin(t)} = -\cot(t) = \text{odd.}$$

Trig identities

Pythagorean identity

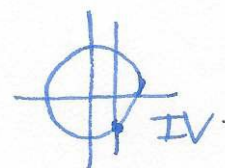
$$x^2 + y^2 = 1 \Leftrightarrow \cos^2 t + \sin^2 t = 1$$

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

$$\Rightarrow 1 + \tan^2 t = \sec^2 t$$

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

$$\Rightarrow \cot^2 t + 1 = \csc^2 t$$



Example if $\cos t = \frac{3}{5}$ and t is in Q IV find all other values of trig functions
 $\Rightarrow \sin t = \pm \frac{4}{5}$ etc.