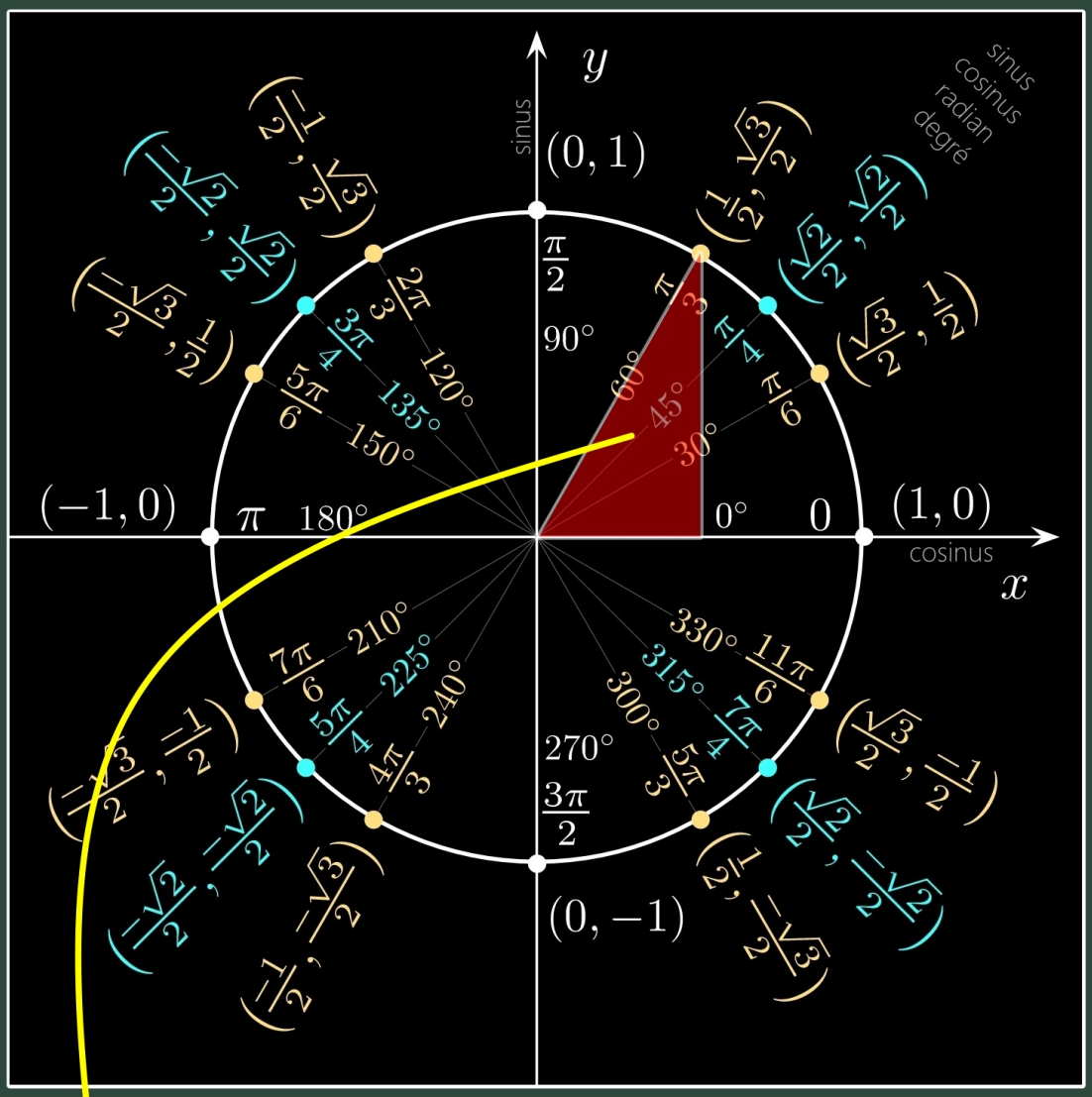
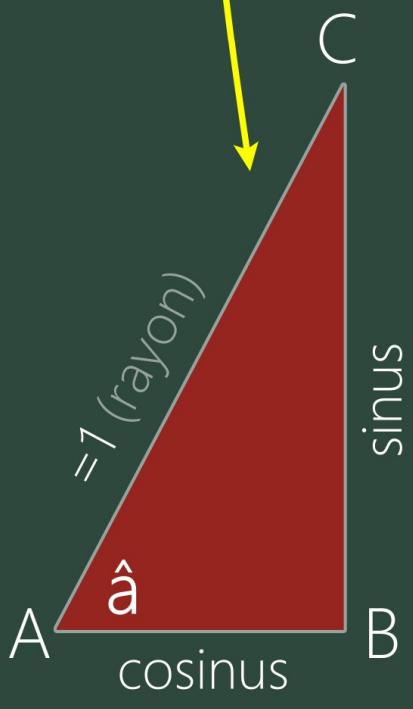
$\sin^2(\hat{a}) + \cos^2(\hat{a}) = 1$





Pythagore:

$AC^2 = AB^2 + BC^2$

$AC^2 = 1$

$1 = AB^2 + BC^2$

$BC = \sin(\hat{a})$

$AB = \cos(\hat{a})$

$\Rightarrow \sin^2(\hat{a}) + \cos^2(\hat{a}) = 1$