

Some unit circle stuff

- For supplementary angles α and β ,
 $\sin \alpha = \sin \beta$ and $\cos \alpha = -\cos \beta$
- For any angle θ , $\sin \theta = \sin (180 - \theta)$ and
 $\cos \theta = -\cos (180 - \theta)$

Pythagorean Identity

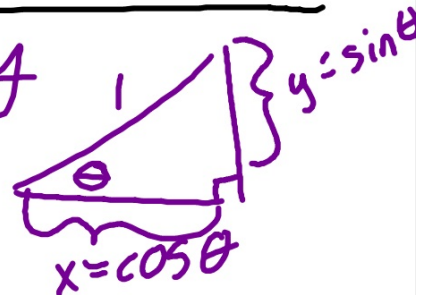
$$x^2 + y^2 = 1$$

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

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

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

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



$$2) \tan \theta = \frac{\sin \theta}{\cos \theta}$$

3) For any line $y = mx$ which forms an angle of θ with the x-axis, the value of m (the gradient of the line) is $\tan \theta$,

Solving Equations using trig functions.

[Ex] Solve the equation $\cos x = \frac{-\sqrt{2}}{2}$
 $-2\pi \leq x \leq 2\pi$
 $-\frac{3\pi}{4}, -\frac{5\pi}{4}, \frac{3\pi}{4}, \frac{5\pi}{4}$

Ex) Solve $\sin(2x) = \frac{\sqrt{2}}{2}$, $0^\circ \leq x \leq 360^\circ$

↑ Domain in degrees
Answer in degrees

$$(2x) = 45^\circ, 135^\circ$$

$$2x = 45$$

$$x = \frac{45}{2} = 22.5^\circ$$

$$2x = 135$$

$$x = \frac{135}{2} = 67.5^\circ$$