

# Exact Values of Trigonometric Functions Using Radians

Using the special triangles write all the exact trig values  
using radians

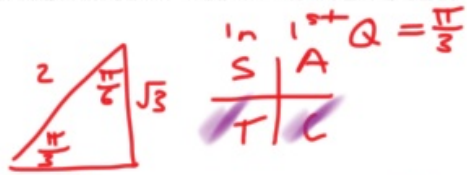
4<sup>th</sup> Q

	$\frac{5\pi}{3}$	$\frac{7\pi}{4}$	$\frac{11\pi}{6}$
sin	$-\frac{\sqrt{3}}{2}$	$-\frac{1}{\sqrt{2}}$	$-\frac{1}{2}$
cos	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$
tan	$-\sqrt{3}$	$-1$	$-\frac{1}{\sqrt{3}}$

# Example 1

Find all the values  $0 \leq x \leq 2\pi$  for which

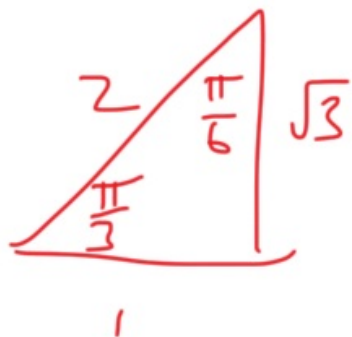
$$\sin x = -\frac{\sqrt{3}}{2}$$



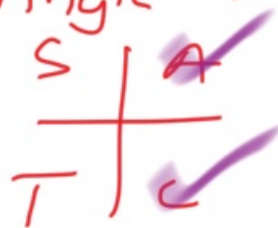
$$\pi + \frac{\pi}{3}, 2\pi - \frac{\pi}{3}$$

$$\frac{4\pi}{3}, \frac{5\pi}{3}$$

$$\cos x = \frac{1}{2}$$



Angle 1<sup>st</sup> Q =  $\frac{\pi}{3}$



$$\frac{\pi}{3}, 2\pi - \frac{\pi}{3}$$

$$\frac{\pi}{3}, \frac{5\pi}{3}$$

## Example 2

Find all the values  $0 \leq x \leq 2\pi$  for which

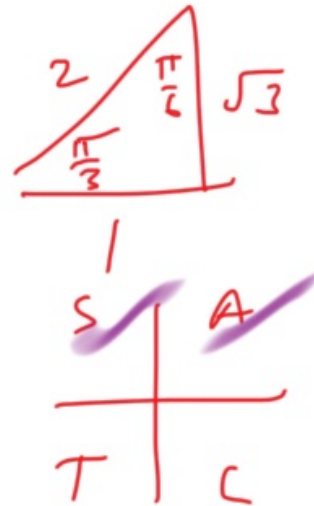
$$2 \sin x - \sqrt{3} = 0$$

$$\therefore 2 \sin x = \sqrt{3}$$

$$\sin x = \frac{\sqrt{3}}{2}$$

$$x = \frac{\pi}{3}, \pi - \frac{\pi}{3}$$

$$= \frac{\pi}{3}, \frac{2\pi}{3}$$



$\pm$  in  $1^{\text{st}}$   $\theta$   $\frac{\pi}{3}$

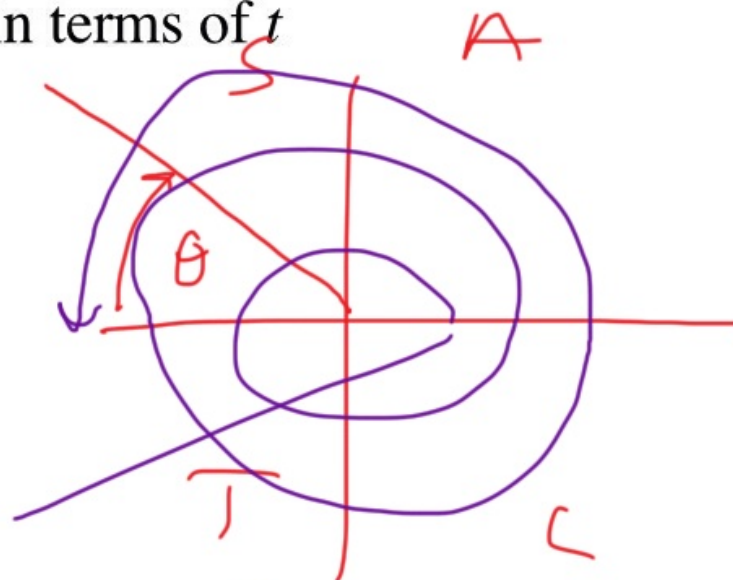
$\frac{\pi}{3}$

### Example 3

If  $t = \tan \theta$  express in terms of  $t$

$$\tan(\pi - \theta)$$

$$= -t$$

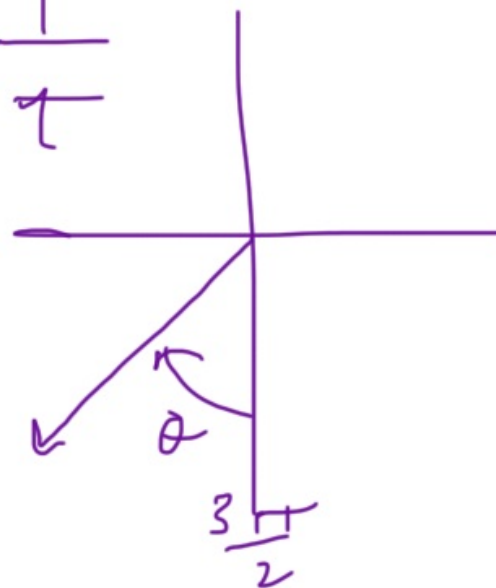
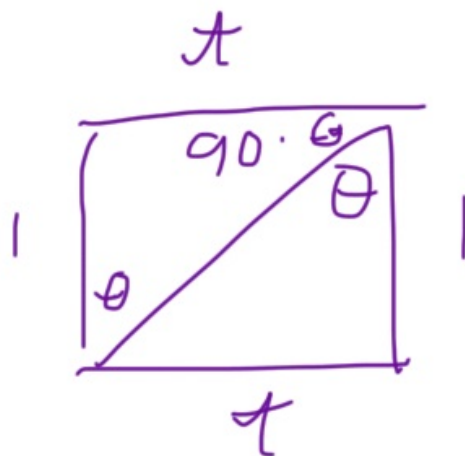


$$\tan(5\pi + \theta) = t$$

### Example 4

If  $t = \tan \theta$  express in terms of  $t$

$$\cot\left(\frac{3\pi}{2} - \theta\right) = \frac{1}{t}$$



$$\cot \theta = \frac{1}{t}$$