

Feb. 27, 2014

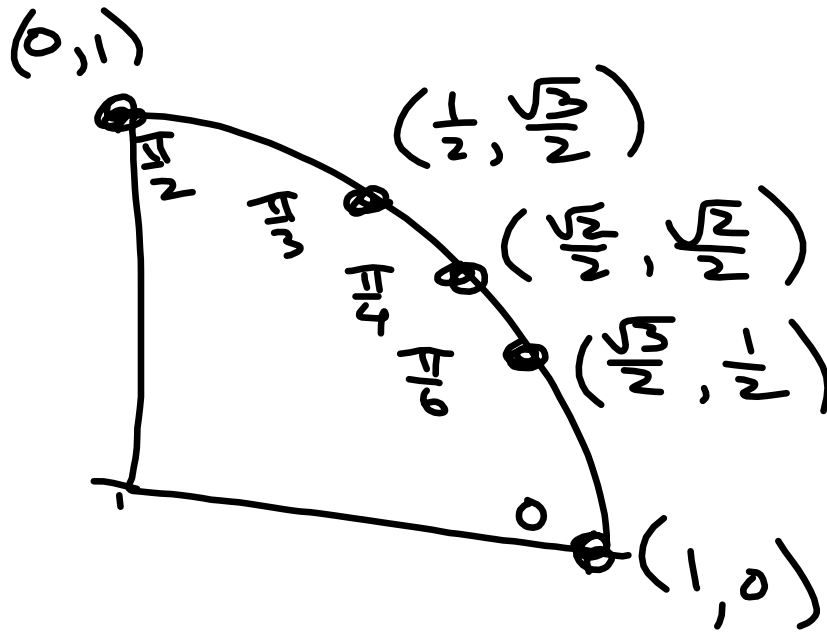
Sect. 2-5

Exact Trig Values

Unit Circle

Reference Angles

Unit Circle



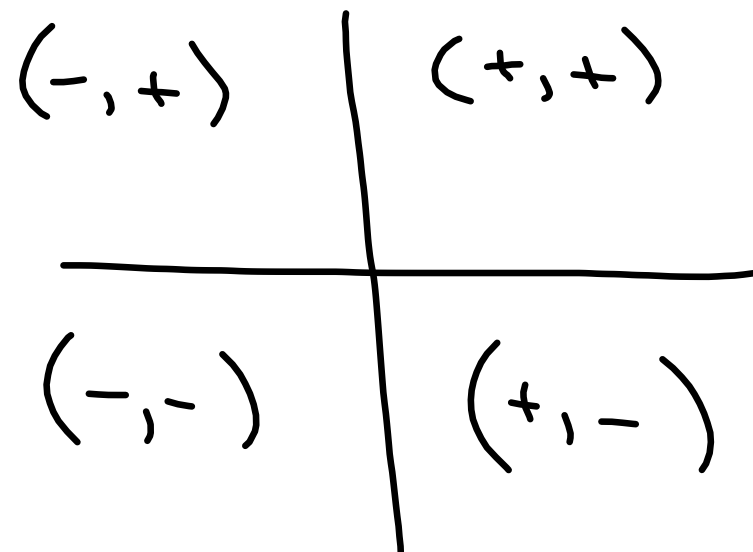
$$X = \cos \theta$$

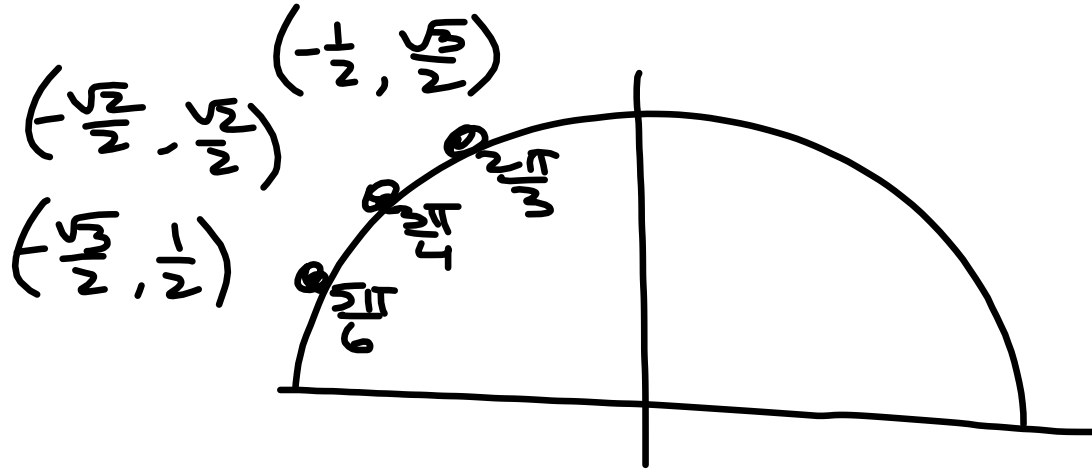
$$Y = \sin \theta$$

A_i	\int	F_i	$ $	N_i
B_i	\int	F_i	$ $	N_i
C_i	\int	F_i	$ $	N_i
D_i	\int	0	$ $	$-$
E_i	\int	F_i	$ $	$-$

Other Quadrants

Use Symmetry





$$\begin{aligned} \sin \theta_1 &= \frac{\sqrt{2}}{2} & \sin \theta_2 &= \frac{\sqrt{3}}{2} \\ \cos \theta_1 &= \frac{1}{\sqrt{2}} & \cos \theta_2 &= \frac{1}{2} \end{aligned}$$

Reference Angle

The "sister" angle in Q1.

For radian measure,
it's the denom.

#

$$\frac{6}{6} = \left(\frac{\sqrt{3}}{2}, \frac{1}{2} \right)$$

$$\frac{4}{4} = \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right)$$

$$\frac{3}{3} = \left(\frac{1}{2}, \frac{\sqrt{3}}{2} \right)$$

$$\frac{2}{2} = (0, 1)$$

$$\frac{1}{1} = (1, 0)$$

Find the Quad

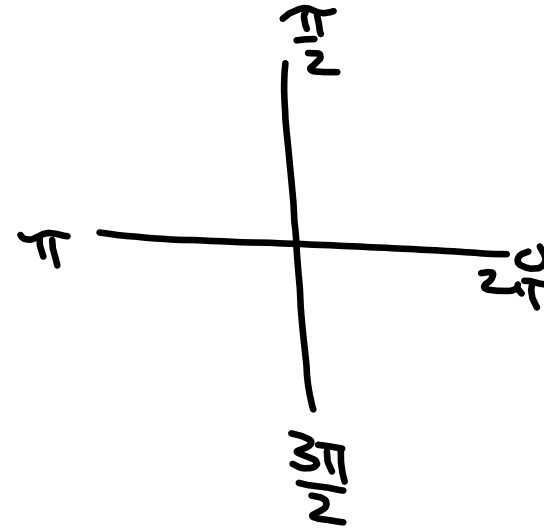
$$\frac{F}{5} \Rightarrow Q1$$

$$\frac{F}{3} \Rightarrow Q4$$

$$\frac{F}{6} \Rightarrow Q3$$

$$\frac{F}{6} \Rightarrow Q4$$

$$\frac{F}{4} \Rightarrow Q2$$



$$S_i \subset \frac{S}{\sim}$$

$$S_i \subset \sim \Rightarrow \left(\frac{-1}{N}, \frac{\sqrt{M}}{\sqrt{N}} \right)$$

$$\frac{S}{\sim} \Rightarrow Q \cap \left(+, - \right)$$

$$S_i \subset \frac{S}{\sim} = - \frac{\sqrt{M}}{\sqrt{N}}$$

$$\tan \frac{2\pi}{3} \quad \tan \theta = \sqrt{3}$$

$$\tan \frac{\pi}{3} \Rightarrow \left(\frac{1}{2}, \frac{\sqrt{3}}{2} \right)$$

$$\frac{\cancel{\sqrt{3}}}{\cancel{1}} = \frac{\sqrt{3}}{1} = \sqrt{3}$$

$$\frac{2\pi}{3} \Rightarrow Q2 \left(-, + \right)$$

$$\tan \frac{2\pi}{3} = -\sqrt{3}$$

$$\sec \frac{\pi}{4} \qquad \sec C = \frac{1}{\cos} = \frac{1}{\frac{1}{\sqrt{2}}}$$

$$\sec \frac{\pi}{4} \Rightarrow \left(\frac{\sqrt{2}}{2}, \frac{\sqrt{2}}{2} \right)$$

$$\frac{1}{\frac{\sqrt{2}}{2}} = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2} = \sqrt{2}$$

$$\frac{\pi}{4} \Rightarrow Q_1 (+, +)$$

$$\sec \frac{\pi}{4} = \sqrt{2}$$

Other way

Given answer, find θ

$$\cos \theta = \frac{\sqrt{3}}{2}, \text{ Find } \theta$$

$$\left(\frac{\sqrt{3}}{2}, \frac{1}{2} \right) \Rightarrow \frac{\pi}{6}$$

cos positive in $Q1$ & $Q4$

$$\theta = \frac{\pi}{6}, \frac{11\pi}{6}$$

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

$$\left(\frac{1}{2}, \frac{\sqrt{3}}{2} \right) \Rightarrow \frac{\pi}{3}$$

\sin is positive in Q_1 & Q_2

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

$$\tan \theta = \frac{\sqrt{3}}{3}$$

$$\frac{\sqrt{3}}{3} = \frac{1}{\sqrt{3}} = \frac{1/\sqrt{3}}{1/\sqrt{3} \cdot \sqrt{3}} = \frac{1/\sqrt{3}}{1}$$

Answer #3
 $\frac{1}{\sqrt{3}}, \frac{\sqrt{3}}{2}, \frac{\sqrt{3}}{2}$

$$\left(\frac{1}{\sqrt{3}}, \frac{1}{\sqrt{3}} \right) \rightarrow$$

6

\tan is pos. in $Q_1 \rightarrow Q_3$

$$\theta = \frac{\pi}{6}, \frac{5\pi}{6}$$