

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

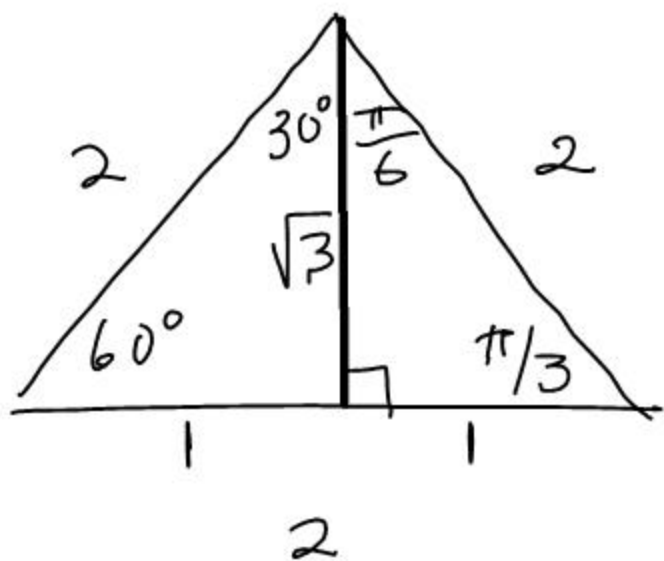
↑
reciprocal of cosine

$$\cot \frac{\pi}{4} = 1$$

↑
reciprocal of tangent

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

↑
reciprocal of sine



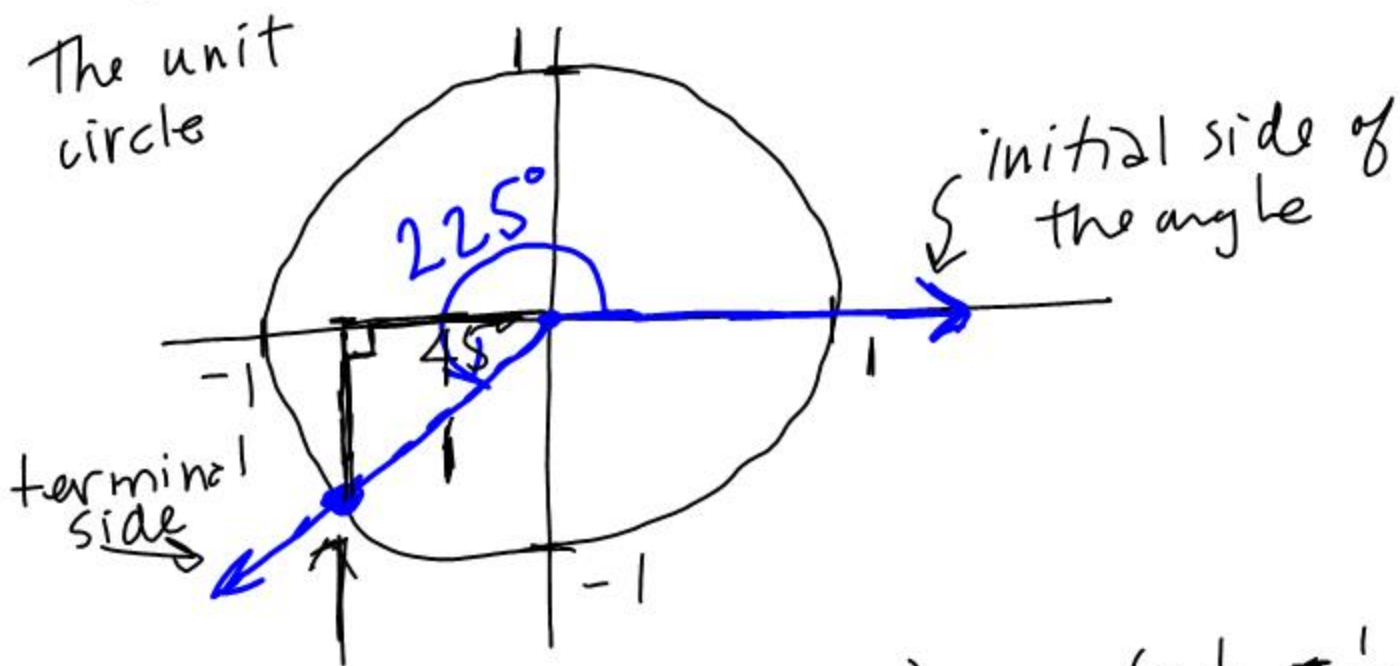
$$\tan \frac{\pi}{6} = \frac{1}{\sqrt{3}}$$

$$\cot \frac{\pi}{3} = \frac{1}{\sqrt{3}}$$

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

$$\csc \frac{\pi}{6} = 2$$

The definition of sine & cosine



$$(\cos 225^\circ, \sin 225^\circ) = \left(-\frac{1}{\sqrt{2}}, -\frac{1}{\sqrt{2}}\right)$$

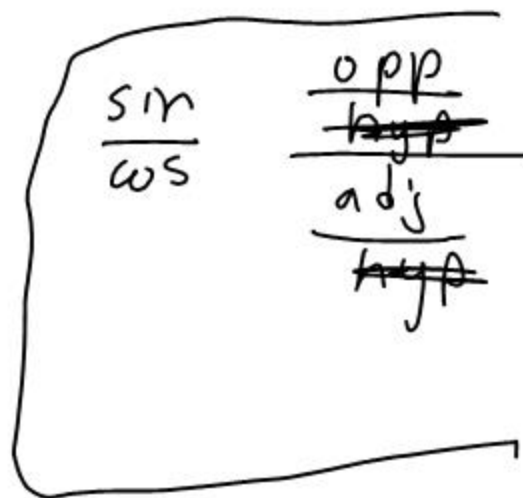
$$\cos 225^\circ = -\frac{1}{\sqrt{2}}$$

$$\sin 225^\circ = -\frac{1}{\sqrt{2}}$$

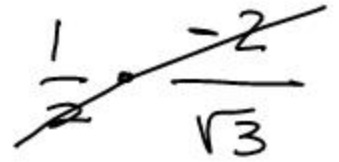
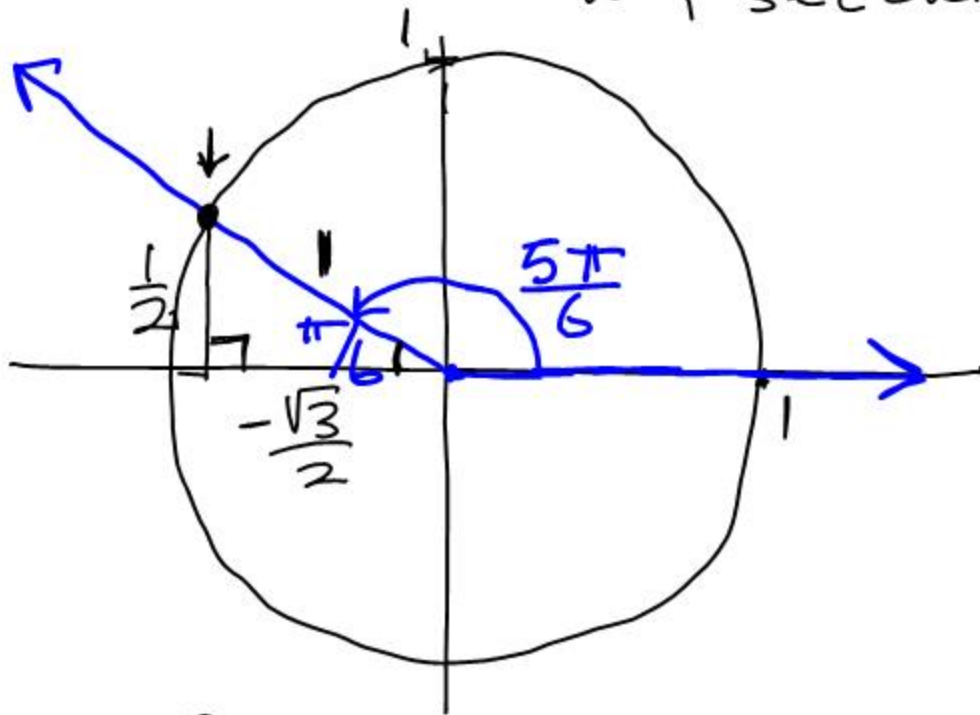
$$\tan 225^\circ = 1$$

$$\tan 225^\circ = \frac{\sin 225^\circ}{\cos 225^\circ} = \frac{-\frac{1}{\sqrt{2}}}{-\frac{1}{\sqrt{2}}}$$

$$\sec 225^\circ = \frac{1}{-\frac{1}{\sqrt{2}}} = -\sqrt{2} = 1$$



Ex. Find the sine, cosine, tangent and secant of $\frac{5\pi}{6}$



$$\sin \frac{5\pi}{6} = \frac{1}{2}$$

$$\tan \frac{5\pi}{6} = \frac{\frac{1}{2}}{-\frac{\sqrt{3}}{2}}$$

$$\cos \frac{5\pi}{6} = -\frac{\sqrt{3}}{2}$$

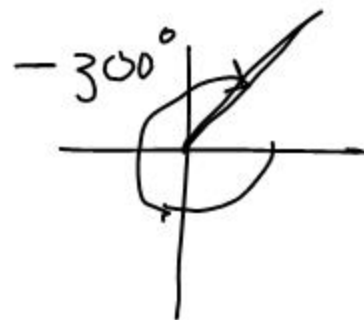
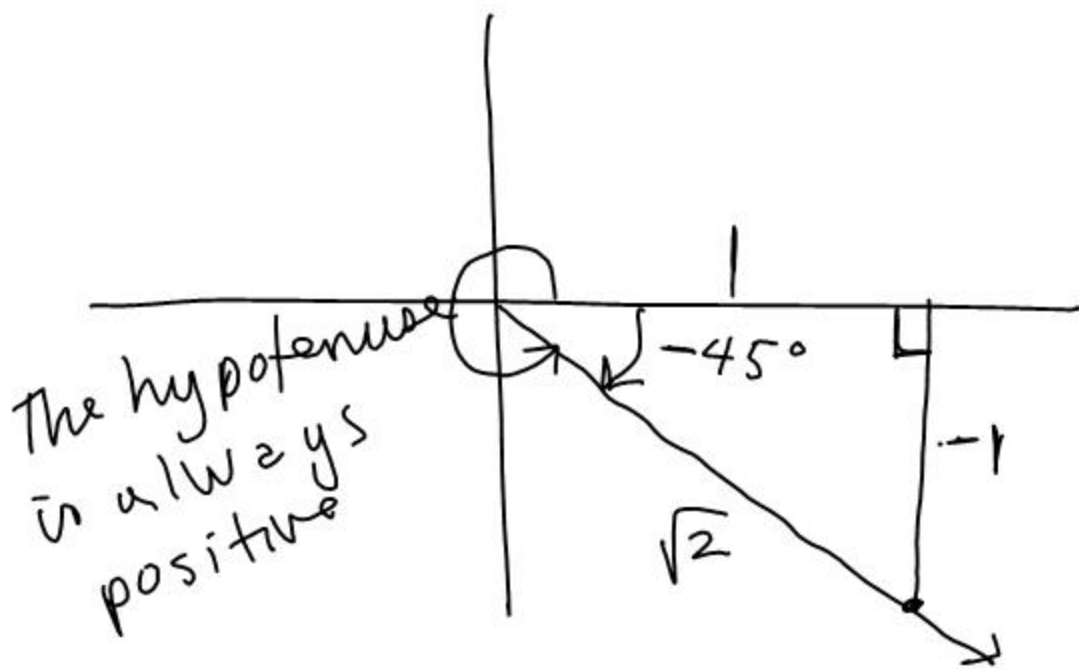
$$= -\frac{1}{\sqrt{3}}$$

$$\sec \frac{5\pi}{6} = \frac{1}{-\frac{\sqrt{3}}{2}}$$

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

The Informed Approach to trig values

Ex. Find the sine, tangent, and
secant of -45°



$$\begin{array}{r} 315^\circ \\ 360^\circ \\ \hline 675^\circ \end{array}$$

-45° 315° 675°

co-terminal angles

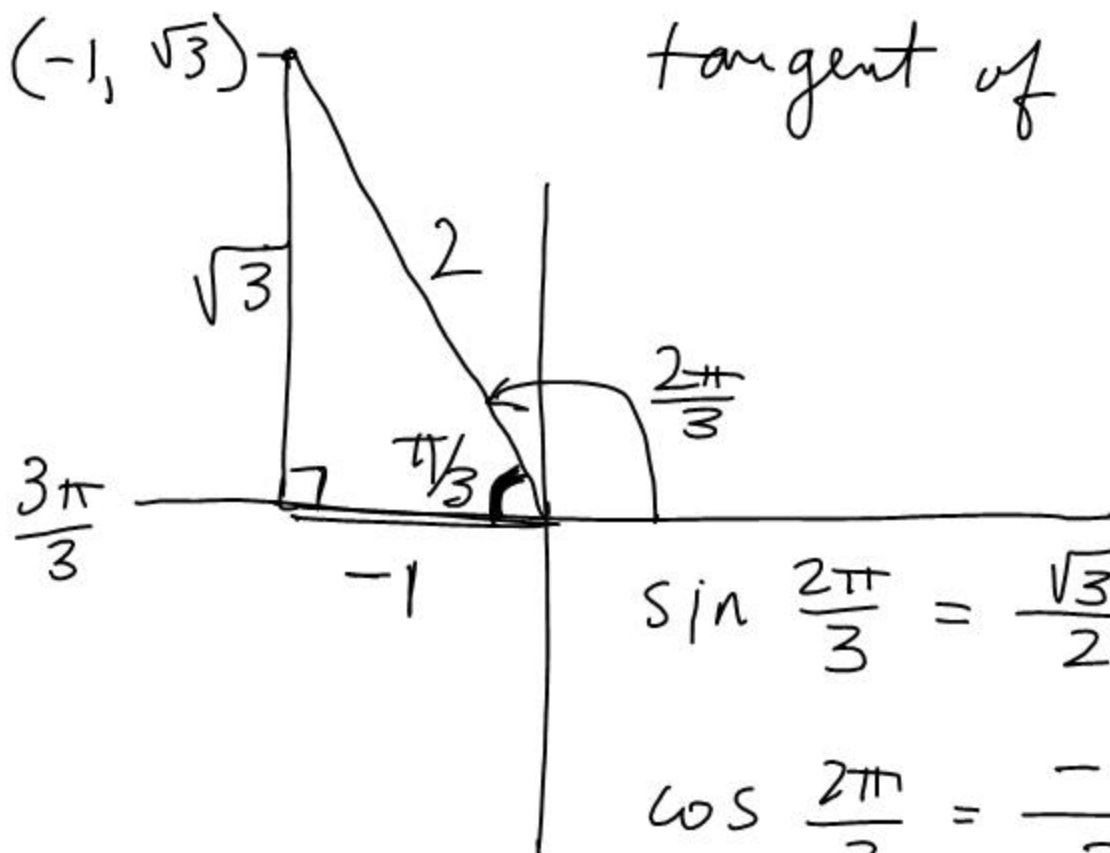
$$\sin -45^\circ = \frac{-1}{\sqrt{2}}$$

$$\sec -45^\circ = \frac{\sqrt{2}}{1}$$

$$\tan -45^\circ = \frac{-1}{1} = -1$$

$$= \sqrt{2}$$

EX1 Find the sine, cosine, and tangent of $\frac{2\pi}{3}$.



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

$$\cos \frac{2\pi}{3} = \frac{-1}{2}$$

$$\tan \frac{2\pi}{3} = \frac{\sqrt{3}}{-1} = -\sqrt{3}$$

Home work

Find all 6 trig values

① 120°

② 300°

③ $\frac{7\pi}{6}$

④ $-\frac{3\pi}{4}$