

## 7.4: Exact Values of Trig

$$(x, y) \rightarrow (\cos\theta, \sin\theta)$$

$\cos\theta = x$ -coordinate

$\sin\theta = y$ -coordinate

$\sec\theta = \text{reciprocal of } \cos\theta \text{ (flip)}$

$\csc\theta = \text{reciprocal of } \sin\theta$

$$\tan\theta = \frac{\sin\theta}{\cos\theta} \quad (\text{KCF})$$

$$\cot\theta = \frac{\cos\theta}{\sin\theta} \quad (\text{KCF})$$

$$\text{Ex 1) } \sin 60^\circ = \boxed{\frac{\sqrt{3}}{2}}$$

$$\text{Ex 2) } \cos \frac{5\pi}{6} = \boxed{-\frac{\sqrt{3}}{2}}$$

$$\text{Ex 3) } \cos 675^\circ = \cos 315^\circ = \boxed{\frac{\sqrt{2}}{2}}$$

$675 - 360 = 315$

$$\text{Ex 4) } \sin -\frac{5\pi}{6} = \sin \frac{7\pi}{6} = \boxed{-\frac{1}{2}}$$

$-\frac{5\pi}{6} + 2\pi = \frac{7\pi}{6}$

$$\text{Ex 5) } \sec \frac{5\pi}{3} = \boxed{2}$$

$$\cos \frac{5\pi}{3} = \frac{1}{2} \downarrow$$

$$\text{Ex 6) } \csc 45^\circ = \boxed{\frac{2}{\sqrt{2}}}$$

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

$$\text{Ex 7) } \tan 210^\circ = \frac{\sin 210^\circ}{\cos 210^\circ}$$

$= \frac{-\frac{1}{2}}{-\frac{\sqrt{3}}{2}} \cdot \frac{2}{2}$

$\frac{1}{2} \cdot \frac{2}{\sqrt{3}} = \boxed{\frac{1}{\sqrt{3}}}$

$$\begin{aligned} \text{Ex 8) } \cot(-90^\circ) &= \cot(270^\circ) = \frac{\cos(270^\circ)}{\sin(270^\circ)} \\ -90 + 360 &= 270^\circ \\ &= \frac{0}{-1} \\ &= \boxed{0} \end{aligned}$$

$\frac{-1}{0} = \text{undefined!!!}$