Trigonometry Unit Circle
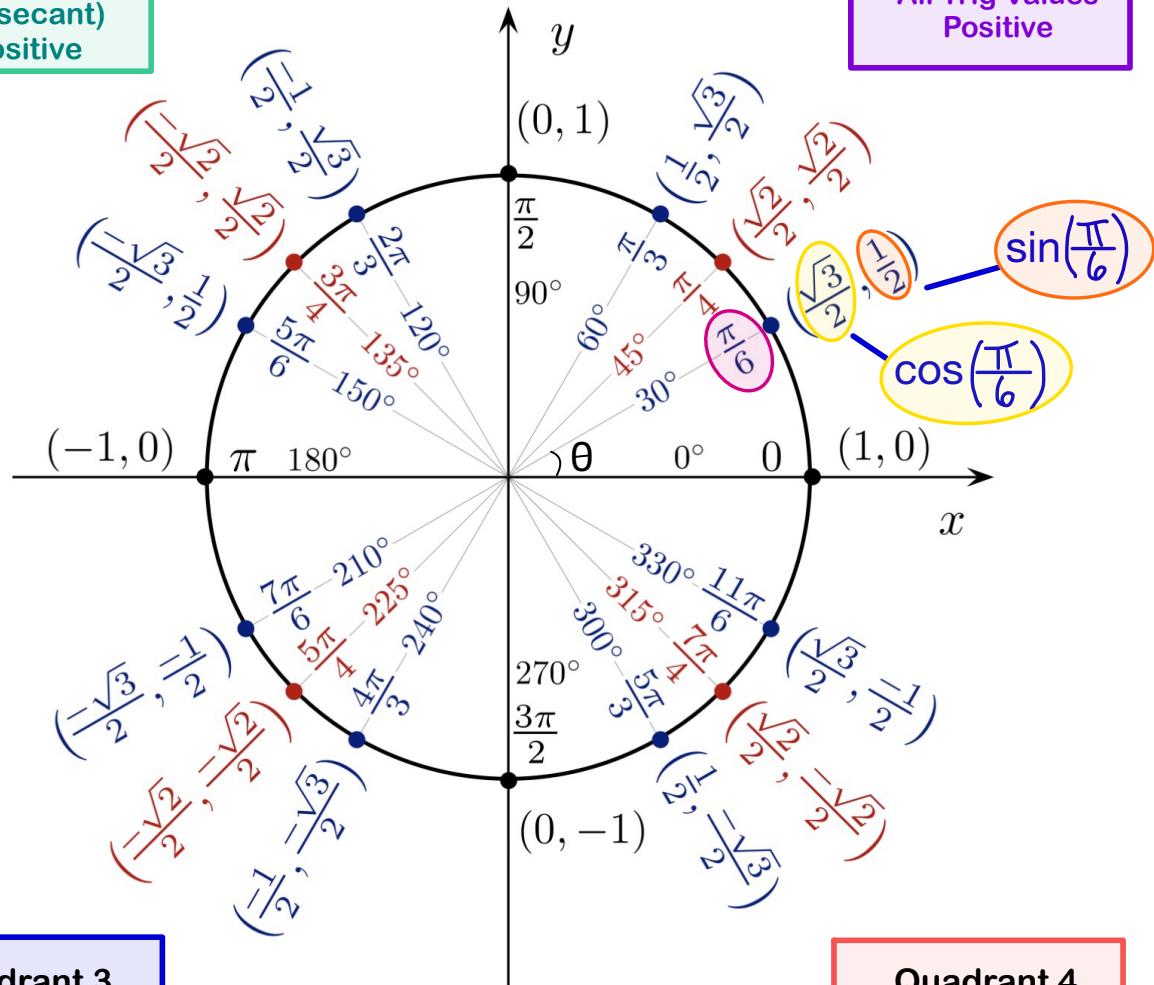
Quadrant 2

Sine (Cosecant) Positive

Quadrant 1

All Trig Values Positive
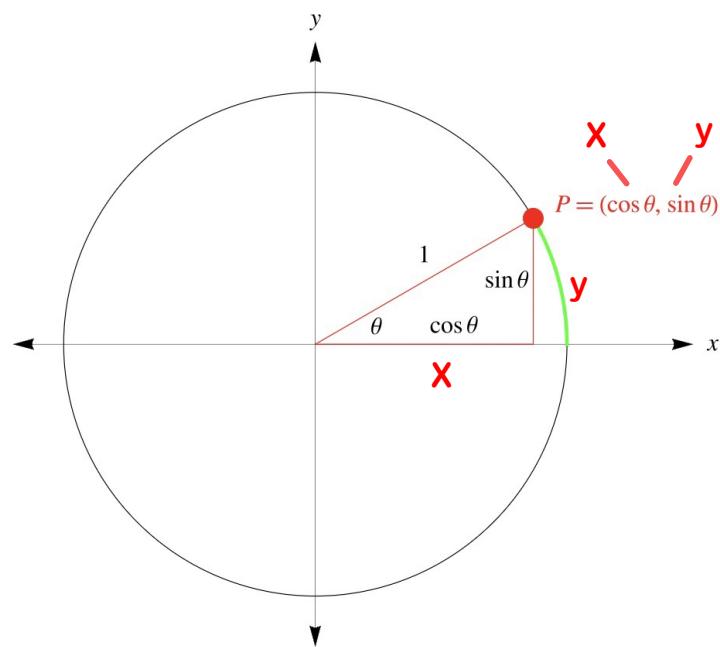
Quadrant 3

Tangent (Cotangent) Positive
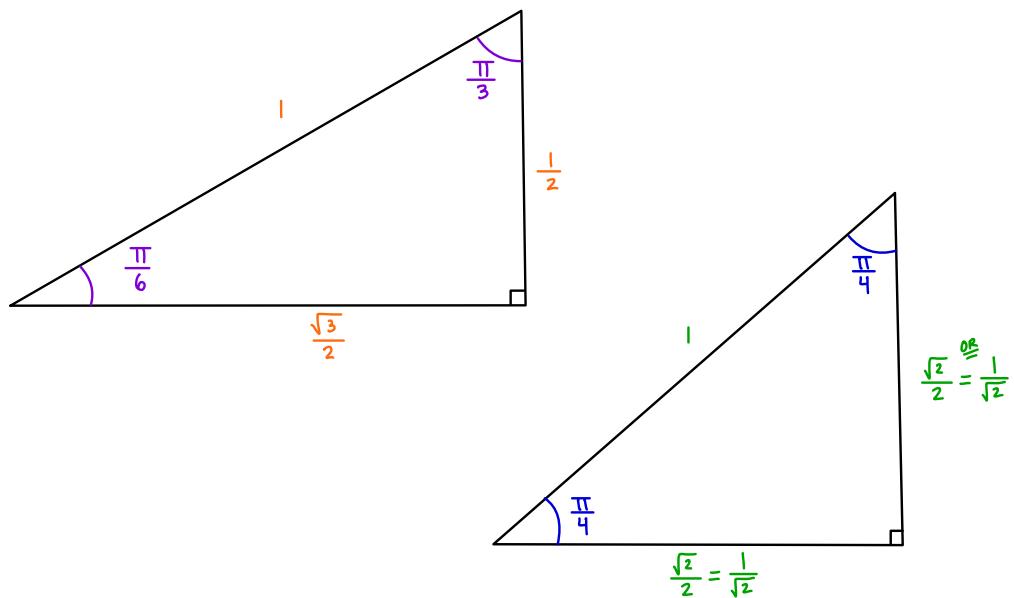
Quadrant 4

Cosine (Secant) Positive

$\cos\theta$=x-coordinate on unit circle

$\sin\theta$=y-coordinate on unit circle

y

$(0,1)$

$\left(\dfrac{-1}{2}, \dfrac{\sqrt{3}}{2}\right)$

$\left(\dfrac{-\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2}\right)$

$\left(\dfrac{-\sqrt{3}}{2}, \dfrac{1}{2}\right)$

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

$\left(\dfrac{\sqrt{2}}{2}, \dfrac{\sqrt{2}}{2}\right)$

$\dfrac{\sqrt{3}}{2}$

$\dfrac{1}{2}$

$\sin\left(\dfrac{\pi}{6}\right)$

$\cos\left(\dfrac{\pi}{6}\right)$

$\dfrac{\pi}{2}$

$90°$

$\dfrac{2\pi}{3}$

$120°$

$\dfrac{3\pi}{4}$

$135°$

$\dfrac{5\pi}{6}$

$150°$

$\dfrac{\pi}{3}$

$60°$

$\dfrac{\pi}{4}$

$45°$

$\dfrac{\pi}{6}$

$30°$

$(-1,0)$ π $180°$ θ $0°$ 0 $(1,0)$

x

$\dfrac{7\pi}{6}$ $210°$

$\dfrac{5\pi}{4}$ $225°$

$\dfrac{4\pi}{3}$ $240°$

$330°$ $\dfrac{11\pi}{6}$

$315°$ $\dfrac{7\pi}{4}$

$300°$ $\dfrac{5\pi}{3}$

$270°$

$\dfrac{3\pi}{2}$

$(0,-1)$

$\left(-\dfrac{\sqrt{3}}{2}, \dfrac{-1}{2}\right)$

$\left(\dfrac{-\sqrt{2}}{2}, \dfrac{-\sqrt{2}}{2}\right)$

$\left(\dfrac{-1}{2}, \dfrac{-\sqrt{3}}{2}\right)$

$\left(\dfrac{\sqrt{3}}{2}, \dfrac{-1}{2}\right)$

$\left(\dfrac{\sqrt{2}}{2}, \dfrac{-\sqrt{2}}{2}\right)$

$\left(\dfrac{1}{2}, \dfrac{-\sqrt{3}}{2}\right)$

y

X   y

$P = (\cos\theta, \sin\theta)$

1

$\sin\theta$

y

θ $\cos\theta$

X

x

Special Trig Triangles

$\frac{\pi}{3}$

1

$\frac{1}{2}$

$\frac{\pi}{6}$

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

$\frac{\pi}{4}$

1

$\frac{\sqrt{2}}{2} \overset{OR}{=} \frac{1}{\sqrt{2}}$

$\frac{\pi}{4}$

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

Trig Graphs

y=sinx

1

-1

0 $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π

y=cosx

1

-1

0 $\frac{\pi}{2}$ π $\frac{3\pi}{2}$ 2π

y=tanx

$-\pi$ $-\frac{\pi}{2}$ 0 $\frac{\pi}{2}$ π