

September 11

SWBAT:

Complete the unit circle chart
for all six trig functions.

$$\cos(\theta) = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\sin(\theta) = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\tan(\theta) = \frac{\text{opposite}}{\text{adjacent}}$$

secant

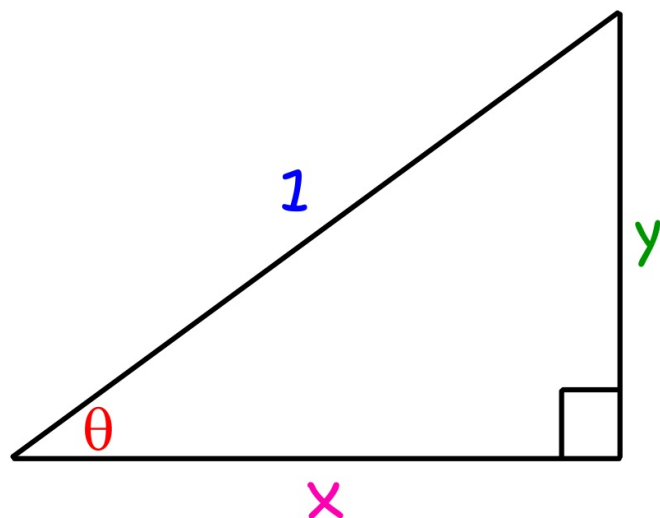
$$\sec(\theta) = \frac{\text{hypotenuse}}{\text{adjacent}}$$

cosecant

$$\csc(\theta) = \frac{\text{hypotenuse}}{\text{opposite}}$$

cotangent

$$\cot(\theta) = \frac{\text{adjacent}}{\text{opposite}}$$



m^R	$\cos \theta$	$\sec \theta$
0	1	1
$\pi/6$	$\frac{\sqrt{3}}{2}$	$\frac{2}{\sqrt{3}}$
$\pi/4$	$\frac{\sqrt{2}}{2}$	$\frac{2}{\sqrt{2}} = \sqrt{2}$
$\pi/3$	$\frac{1}{2}$	2
$\pi/2$	0	$\frac{0}{1} \frac{1}{0}$ undefined
$2\pi/3$	$-\frac{1}{2}$	-2
$3\pi/4$	$-\frac{\sqrt{2}}{2}$	$-\frac{2}{\sqrt{2}}$
$5\pi/6$	$-\frac{\sqrt{3}}{2}$	$-\frac{2}{\sqrt{3}}$
π	-1	-1
$7\pi/6$	$-\frac{\sqrt{3}}{2}$	$-\frac{2}{\sqrt{3}}$
$5\pi/4$	$-\frac{\sqrt{2}}{2}$	$-\frac{2}{\sqrt{2}}$
$4\pi/3$	$-\frac{1}{2}$	-2
$3\pi/2$	0	undef
$5\pi/3$	$\frac{1}{2}$	2
$7\pi/4$	$\frac{\sqrt{2}}{2}$	$\frac{2}{\sqrt{2}}$
$11\pi/6$	$\frac{\sqrt{3}}{2}$	$\frac{2}{\sqrt{3}}$

m^R	$\sin \theta$	$\csc \theta$
0	0	$\frac{0}{1} \frac{1}{0}$ undef
$\pi/6$	$\frac{1}{2}$	2
$\pi/4$	$\frac{\sqrt{2}}{2}$	$2/\sqrt{2}$
$\pi/3$	$\frac{\sqrt{3}}{2}$	$2/\sqrt{3}$
$\pi/2$	1	1
$2\pi/3$	$\frac{\sqrt{3}}{2}$	$2/\sqrt{3}$
$3\pi/4$	$\frac{\sqrt{2}}{2}$	$2/\sqrt{2}$
$5\pi/6$	$\frac{1}{2}$	2
π	0	undef.
$7\pi/6$	$-\frac{1}{2}$	-2
$5\pi/4$	$-\frac{\sqrt{2}}{2}$	$-2/\sqrt{2}$
$4\pi/3$	$-\frac{\sqrt{3}}{2}$	$-2/\sqrt{3}$
$3\pi/2$	-1	-1
$5\pi/3$	$-\frac{\sqrt{3}}{2}$	$-2/\sqrt{3}$
$7\pi/4$	$-\frac{\sqrt{2}}{2}$	$-2/\sqrt{2}$
$11\pi/6$	$-\frac{1}{2}$	-2
2π	0	undef

m^R	$\tan \theta$	$\cot \theta$
0	0	$\frac{0}{\#}$ undef $\frac{\#}{0}$
$\pi/6$	$\frac{1}{\sqrt{3}}$	$\sqrt{3}$
$\pi/4$	1	1
$\pi/3$	$\sqrt{3}$	$1/\sqrt{3}$
$\pi/2$	undefined	$\frac{1}{0} \frac{0}{1}$ 0
$2\pi/3$	$-\sqrt{3}$	$-1/\sqrt{3}$
$3\pi/4$	-1	-1
$5\pi/6$	$-\frac{1}{\sqrt{3}}$	$-\sqrt{3}$
π	0	undef
$7\pi/6$	$\frac{1}{\sqrt{3}}$	$\sqrt{3}$
$5\pi/4$	1	1
$4\pi/3$	$\sqrt{3}$	$1/\sqrt{3}$
$3\pi/2$	undefined	0
$5\pi/3$	$-\sqrt{3}$	$-1/\sqrt{3}$
$7\pi/4$	-1	-1
$11\pi/6$	$-\frac{1}{\sqrt{3}}$	$-\sqrt{3}$
2π		undef

	m^R
-2π	0
$-\frac{11\pi}{6}$	$\pi/6$
$-\frac{7\pi}{4}$	$\pi/4$
$-\frac{5\pi}{3}$	$\pi/3$
$-\frac{3\pi}{2}$	$\pi/2$
$-\frac{4\pi}{3}$	$2\pi/3$
$-\frac{5\pi}{4}$	$3\pi/4$
$-\frac{7\pi}{6}$	$5\pi/6$
$-\pi$	π
$-\frac{5\pi}{6}$	$7\pi/6$
$-\frac{3\pi}{4}$	$5\pi/4$
$-\frac{2\pi}{3}$	$4\pi/3$
$-\frac{\pi}{2}$	$3\pi/2$
$-\frac{\pi}{3}$	$5\pi/3$
$-\frac{\pi}{4}$	$7\pi/4$
$-\frac{\pi}{6}$	$11\pi/6$

$$\frac{\pi}{6} - \frac{2\pi}{1} = \frac{\pi}{6} - \frac{12\pi}{6} = -\frac{11\pi}{6}$$

m^R	degrees	$\cos(\theta)$	$\sin(\theta)$	$\tan \theta$
0	0	1	0	
$\pi/6$	30	$\sqrt{3}/2$	$1/2$	
$\pi/4$	45	$\sqrt{2}/2$	$\sqrt{2}/2$	
$\pi/3$	60	$1/2$	$\sqrt{3}/2$	
$\pi/2$	90	0	1	
$2\pi/3$	120	$-1/2$	$\sqrt{3}/2$	
$3\pi/4$	135	$-\sqrt{2}/2$	$\sqrt{2}/2$	
$5\pi/6$	150	$-\sqrt{3}/2$	$1/2$	
π	180	-1	0	
$7\pi/6$	210	$-\sqrt{3}/2$	$-1/2$	
$5\pi/4$	225	$-\sqrt{2}/2$	$-\sqrt{2}/2$	
$4\pi/3$	240	$-1/2$	$-\sqrt{3}/2$	
$3\pi/2$	270	0	-1	
$5\pi/3$	300	$1/2$	$-\sqrt{3}/2$	
$7\pi/4$	315	$\sqrt{2}/2$	$-\sqrt{2}/2$	
$11\pi/6$	330	$\sqrt{3}/2$	$-1/2$	
	360	1	0	

$$t = \frac{5\pi}{4}$$

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

$$t = \frac{11\pi}{6}$$

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

$$t = \frac{\pi}{4}$$

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