

Positive: sin, csc  
Negative: cos, tan, sec, cot

Positive: sin, cos, tan, sec, csc, cot  
Negative: none

+ CCW  
- CW

3.14

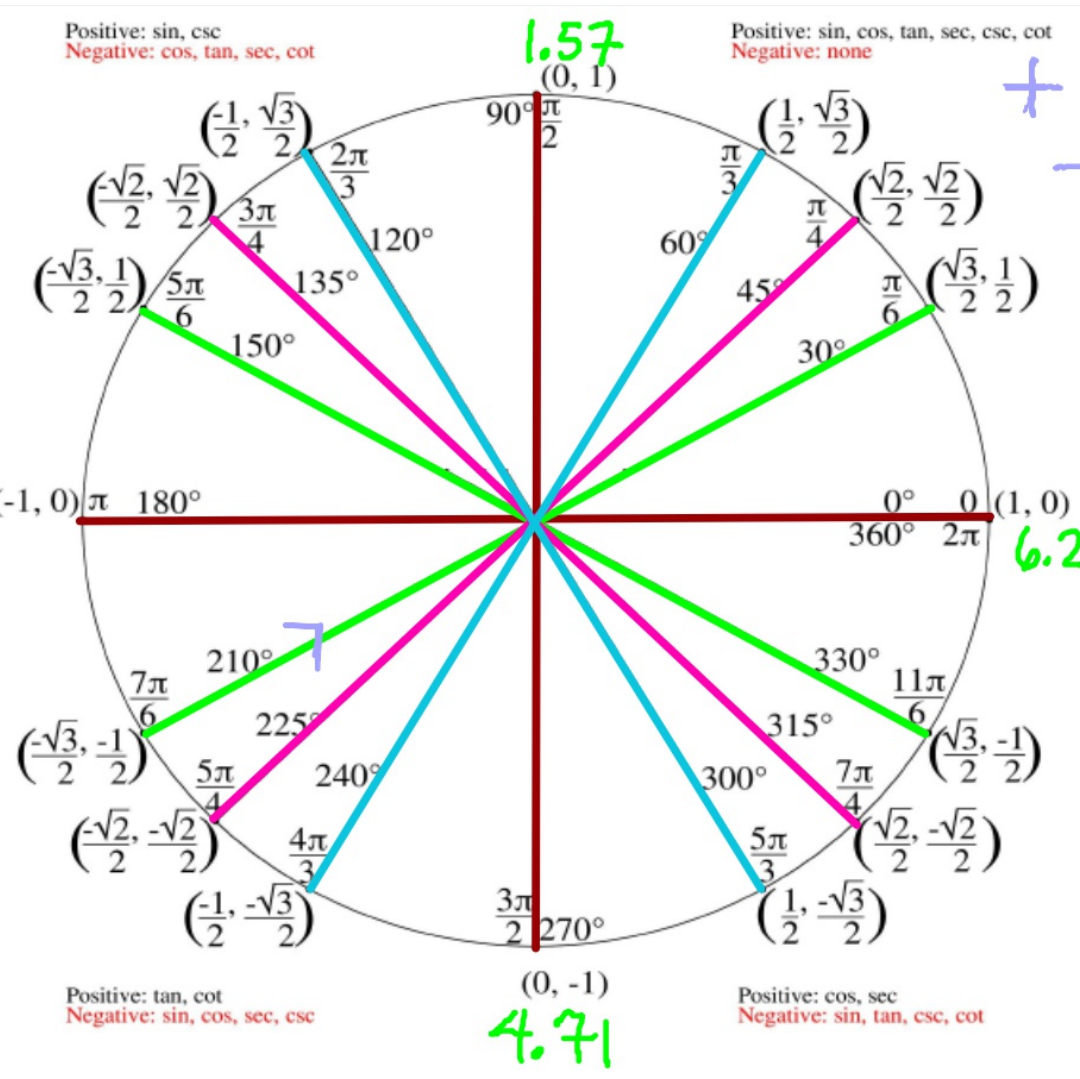
1.57

6.28

4.71

Positive: tan, cot  
Negative: sin, cos, sec, csc

Positive: cos, sec  
Negative: sin, tan, csc, cot



# Day 1 Trigonometry ♡

on the U.C. only:

$$x \Rightarrow \cos \theta$$

$$y \Rightarrow \sin \theta$$

$$\frac{y}{x} \Rightarrow \tan \theta = \frac{\sin \theta}{\cos \theta}$$

when making tan.  
only put  
 $\frac{\text{numerator}}{\text{denominator}}$

ex)  $(\frac{1}{2}, \frac{\sqrt{3}}{2})$

find  $\tan 60^\circ$

$$\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} \Rightarrow$$

$$\frac{\sqrt{3}}{2} \cdot \frac{2}{1} \Rightarrow$$

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

$$\sec \theta = \frac{1}{\cos \theta} = \frac{1}{x}$$

$$\csc \theta = \frac{1}{\sin \theta} = \frac{1}{y}$$

$$\cot \theta = \frac{1}{\tan \theta} = \frac{\cos \theta}{\sin \theta} = \frac{x}{y}$$

think: recip.  
of  $x$

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

$$\frac{1}{\frac{\sqrt{3}}{2}} \Rightarrow$$

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

Ex State the  $\angle$  in degree. (may have mult. ans)  
radians

A)  $\sin \theta = \frac{1}{2}$

$\theta = 30^\circ, 150^\circ$   
 $\frac{\pi}{6}, \frac{5\pi}{6}$

C)  $\tan \theta = 1$

$\theta = 45^\circ, 225^\circ$

B)  $\cos \theta = -\frac{\sqrt{2}}{2}$

$\theta = 135^\circ, 225^\circ$   
 $\frac{3\pi}{4}, \frac{5\pi}{4}$

D)  $\csc \theta = -2$

$\sin \theta = -\frac{1}{2}$

$\theta = 210^\circ, 330^\circ$

Ex State the exact value  $(0, 1)$

A.  $\sec \frac{\pi}{4} = \frac{2}{\sqrt{2}}$  C.  $\csc \frac{\pi}{2} = 1$

B.  $\cot 0^\circ = \text{undef}$  D.  $\tan 240^\circ = \sqrt{3}$   
 $(1, 0)$   $(-\frac{1}{2}, -\frac{\sqrt{3}}{2})$

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

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

$\sqrt{2}$

$\frac{0}{\cancel{2}} = 0$

$\frac{\cancel{2}}{0} = \text{undef}$

# Convert degrees to radians

$$(\text{deg.} \leftarrow) \left( \frac{\pi}{180^\circ} \right)$$

$$\frac{53}{\cancel{100}} \cdot \frac{\pi \text{ rads}}{\cancel{180^\circ}}$$

$$\frac{90}{45}$$

$$\frac{53\pi}{45}$$

radians in terms of  $\pi$

radians in dec.

3.7000

Convert from rads  $\rightarrow$  deg

$$(\text{rad} <) \left( \frac{180^\circ}{\pi} \right)$$

Ex

$$\frac{11\pi}{2} \cdot \frac{90}{\cancel{\pi} \cancel{180}^\circ}$$

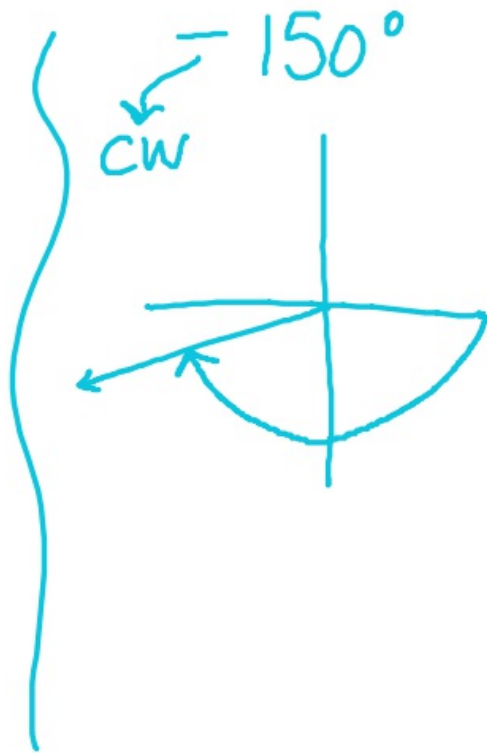
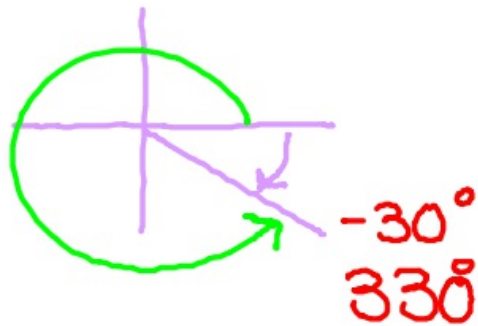
$$\boxed{990^\circ}$$







$-30^\circ$   
go clockwise



coterminal

$2 < s w /$   
Same location  
but diff. name

Ex Created by  $\pm 360^\circ$  or  $\pm 2\pi$   
Find 1 pos & 1 neg cot.  $\leftarrow$

$$\text{to } \frac{7\pi}{8}$$

$$\frac{7\pi}{8} + \frac{16}{8} \frac{2\pi}{8}$$

$$\frac{23\pi}{8}$$

$$\frac{7\pi}{8} - \frac{16}{8} \frac{2\pi}{8}$$

$$\frac{-9\pi}{8}$$

Ex State the 6 trigonometric values  
for  $\frac{23\pi}{6}$   $\frac{-12\pi}{6}$

$$\frac{11\pi}{6} \quad \left( \frac{\sqrt{3}}{2}, -\frac{1}{2} \right)$$

|                        |                       |                        |                      |
|------------------------|-----------------------|------------------------|----------------------|
| $\sin \frac{11\pi}{6}$ | $-\frac{1}{2}$        | $\csc \frac{11\pi}{6}$ | $-2$                 |
| $\cos \frac{11\pi}{6}$ | $\frac{\sqrt{3}}{2}$  | $\sec \frac{11\pi}{6}$ | $\frac{2}{\sqrt{3}}$ |
| $\tan \frac{11\pi}{6}$ | $-\frac{1}{\sqrt{3}}$ | $\cot \frac{11\pi}{6}$ | $-\sqrt{3}$          |

वर्तिका

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

## Quotient ID's

$$\frac{\sin\theta}{\cos\theta} = \tan\theta$$

0