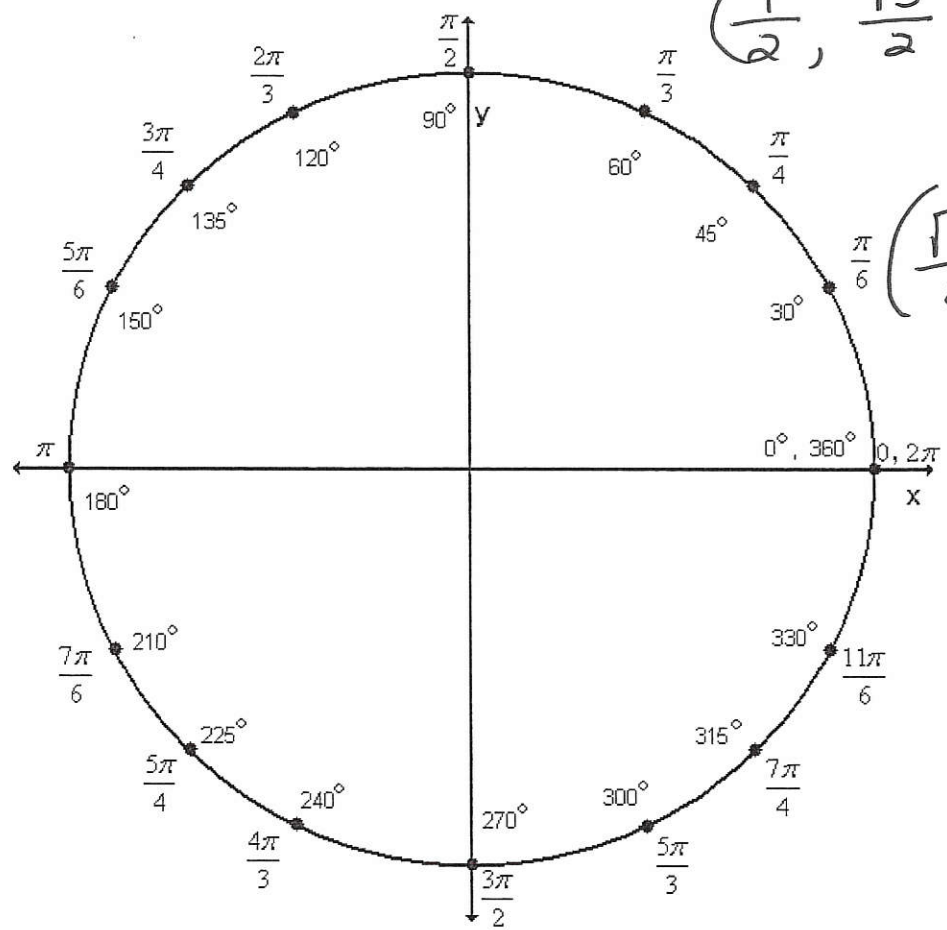


Key

UNIT 6 WORKSHEET 9  
USING THE UNIT CIRCLE



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

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

Use the unit circle above to find the exact value of each of the following. (Exact value means no decimal approximations.)

A)  $\sin \frac{3\pi}{2} = -1$

B)  $\csc \frac{7\pi}{4} = \frac{1}{\sin} = \frac{1}{y}$   
 $1 \div \frac{1}{\sqrt{2}} = \frac{1}{\frac{1}{\sqrt{2}}} = \frac{\sqrt{2}}{1} = \sqrt{2}$   
 Q4 → neg

C)  $\tan \frac{\pi}{3} = \sqrt{3}$

D)  $\sec(-\frac{5\pi}{6}) = \frac{1}{\cos} = \frac{2\sqrt{3}}{3}$

E)  $\cot(-\frac{11\pi}{6}) = \frac{1}{\tan} = \frac{x}{y} = \frac{\sqrt{3}}{1} = \sqrt{3}$   
 Q1 → pos

F)  $\cos(-\frac{\pi}{3}) = \frac{1}{2}$   
 Q4 → +

$\frac{1}{\cos} = \frac{2\sqrt{3}}{3}$   
 Q3 cos neg  
 $\cos \frac{\pi}{6} = \frac{\sqrt{3}}{2}$

H)  $\tan(-\frac{10\pi}{3}) = \frac{y}{x} = \frac{-6\pi/3 + -4\pi/3}{1} = -2$   
 Q2, neg

D)  $\sec \frac{19\pi}{4} = \frac{1}{\cos} = \frac{1}{\cos(\frac{8\pi}{4} + \frac{8\pi}{4} + \frac{3\pi}{4})} = \frac{1}{\cos(\frac{3\pi}{4})} = \frac{1}{-\frac{\sqrt{2}}{2}} = -\frac{2}{\sqrt{2}} = -\sqrt{2}$   
 Q2 neg

$\frac{1}{\sin} = \frac{1}{y} = \frac{1}{\frac{1}{\sqrt{3}}} = \sqrt{3}$

$-\sqrt{3}$

$\frac{26\pi}{3} \Rightarrow \frac{2\pi}{3}, Q2 POS$

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

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

J)  $\cos(-225^\circ) = \frac{-\sqrt{2}}{2}$   
 Q2  $\rightarrow$  neg

K)  $\cos 0 = 1$

L)  $\sec(-780^\circ) = \frac{1}{\cos}$   
 $-60 \rightarrow$  Q4  
 $\cos(+)$

M)  $\csc \frac{2\pi}{3} = \frac{2\sqrt{3}}{3}$

N)  $\cot \frac{4\pi}{3} = \frac{\sqrt{3}}{3}$

O)  $\sin(-480^\circ) = \frac{-\sqrt{3}}{2}$

$\frac{1}{\sin} = 1 \div \frac{\sqrt{3}}{2} = \frac{2}{\sqrt{3}}$   
 Q2  $\rightarrow$  sin +

Q3  $\rightarrow$  tan pos so cot +

-360 + -120  $\rightarrow$   
 Q3  $\rightarrow$  neg  
 -120 is  $\pi/3$  fam  
 R)  $\sec 900^\circ =$

P)  $\cos(-\frac{13\pi}{4}) = \frac{-\sqrt{2}}{2}$

Q)  $\sin \frac{47\pi}{6} = \frac{-1}{2}$   
 $12 + 12 + 12 + \frac{11\pi}{6}$   
 Q4  $\rightarrow$  neg

$= 720 + 180 (-1, 0)$   
 $\sec = \frac{1}{\cos} = \frac{1}{-1} = -1$

$\frac{-8\pi}{4} + \frac{-5\pi}{4}$  Q2  $\rightarrow$  neg

S)  $\cot \frac{13\pi}{2} = \frac{x}{y} = 0$

T)  $\tan(-\frac{11\pi}{3}) = \sqrt{3}$

U)  $\sin \frac{25\pi}{6} = \frac{1}{2}$

$\frac{4\pi}{2} + \frac{4\pi}{2} + \frac{4\pi}{2} + \frac{\pi}{2}$   
 (0, 1)

$\frac{-6\pi}{3} - \frac{5\pi}{3} \rightarrow$   
 Q1 (+)

$\frac{12\pi}{6} \quad \frac{12\pi}{6} \quad \frac{\pi}{6}$

V) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

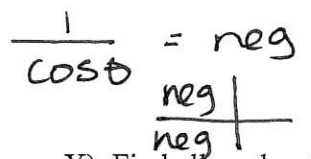
$\sin \theta = -\frac{1}{2}$   $\theta = \frac{7\pi}{6}, \frac{11\pi}{6}$



$\downarrow$   $\pi/6$  fam

W) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

$\sec \theta = -\sqrt{2}$   $\theta = \frac{3\pi}{4}, \frac{5\pi}{4}$



$-\sqrt{2} = \frac{1}{\cos \theta} \rightarrow -\sqrt{2} \cos \theta = 1$   
 $\cos \theta = -\frac{1}{\sqrt{2}} = \frac{-\sqrt{2}}{2} = \pi/4$  fam

X) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

$\tan \theta = \text{undefined}$   $\theta = \frac{\pi}{2}, \frac{3\pi}{2}$

$\tan \theta = \frac{y}{x} = \frac{0}{0}$

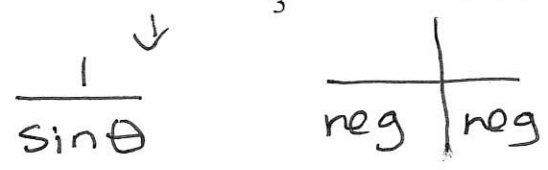
where is  $x=0$ ?



in Q2, Q3

Y) Find all angles  $\theta$  in the interval  $[0, 2\pi)$  that satisfy the expression:

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



$\rightarrow \frac{4\pi}{3}, \frac{5\pi}{3}$

which fam has  $\sin \theta = \frac{\sqrt{3}}{2}$ ?  $\rightarrow \frac{\pi}{3}$  fam