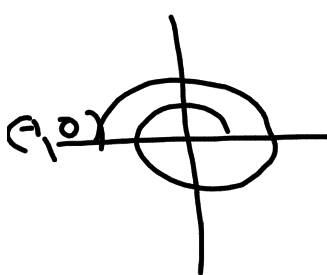


***10 minutes to complete trig table quiz!!!

*When finished with chart, put away your unit circle and try to recreate it on the back.

What are your homework questions?

(14) $\theta = 540$



$\begin{pmatrix} \cos & \sin \\ -1 & 0 \end{pmatrix}$

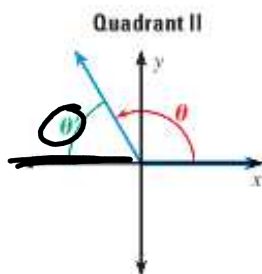
$\tan = \frac{\sin}{\cos}$
 $\tan 540 = \frac{0}{-1} = 0$

$\sec = \frac{1}{\cos}$
 $\sec 540 = \frac{1}{-1} = -1$

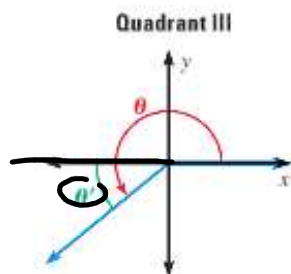
$\csc = \frac{1}{\sin}$
 $= \frac{1}{0}$ and

Reference Angle Relationships

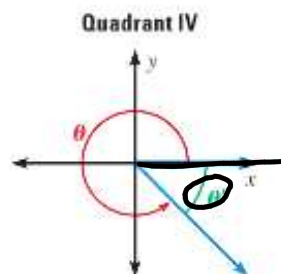
Let θ be an angle in standard position. The **reference angle** for θ is the acute angle θ' formed by the terminal side of θ and the x -axis. The relationship between θ and θ' is shown below for nonquadrantal angles θ such that $90^\circ < \theta < 360^\circ$ ($\frac{\pi}{2} < \theta < 2\pi$).



Degrees: $\theta' = 180^\circ - \theta$
Radians: $\theta' = \pi - \theta$



Degrees: $\theta' = \theta - 180^\circ$
Radians: $\theta' = \theta - \pi$

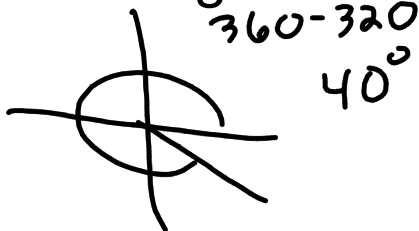


Degrees: $\theta' = 360^\circ - \theta$
Radians: $\theta' = 2\pi - \theta$

Review

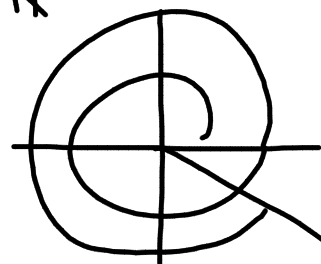
Sketch the angle. Then find its reference angle.

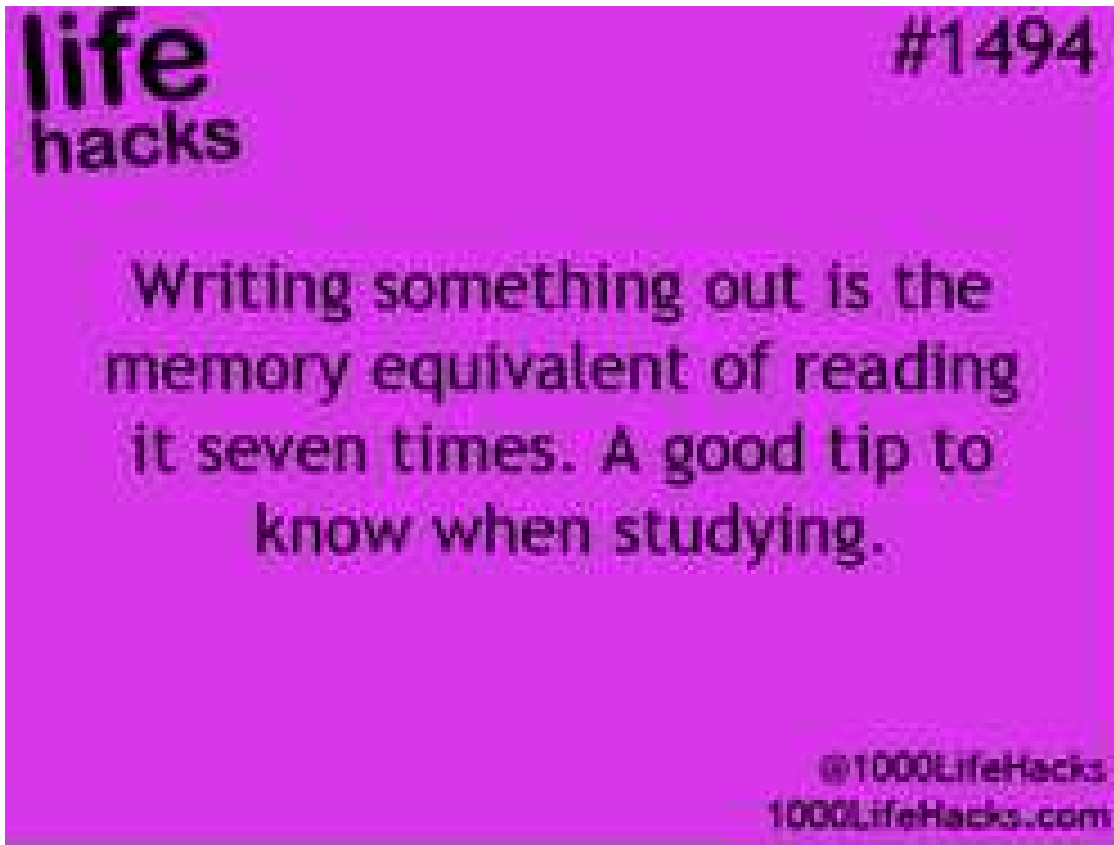
1) 320 degrees



2) $\frac{15\pi}{4}$. $\frac{180}{\pi}$ 675

$\frac{\pi}{4}$





Diagram

<http://www.mathsisfun.com/geometry/unit-circle.html>

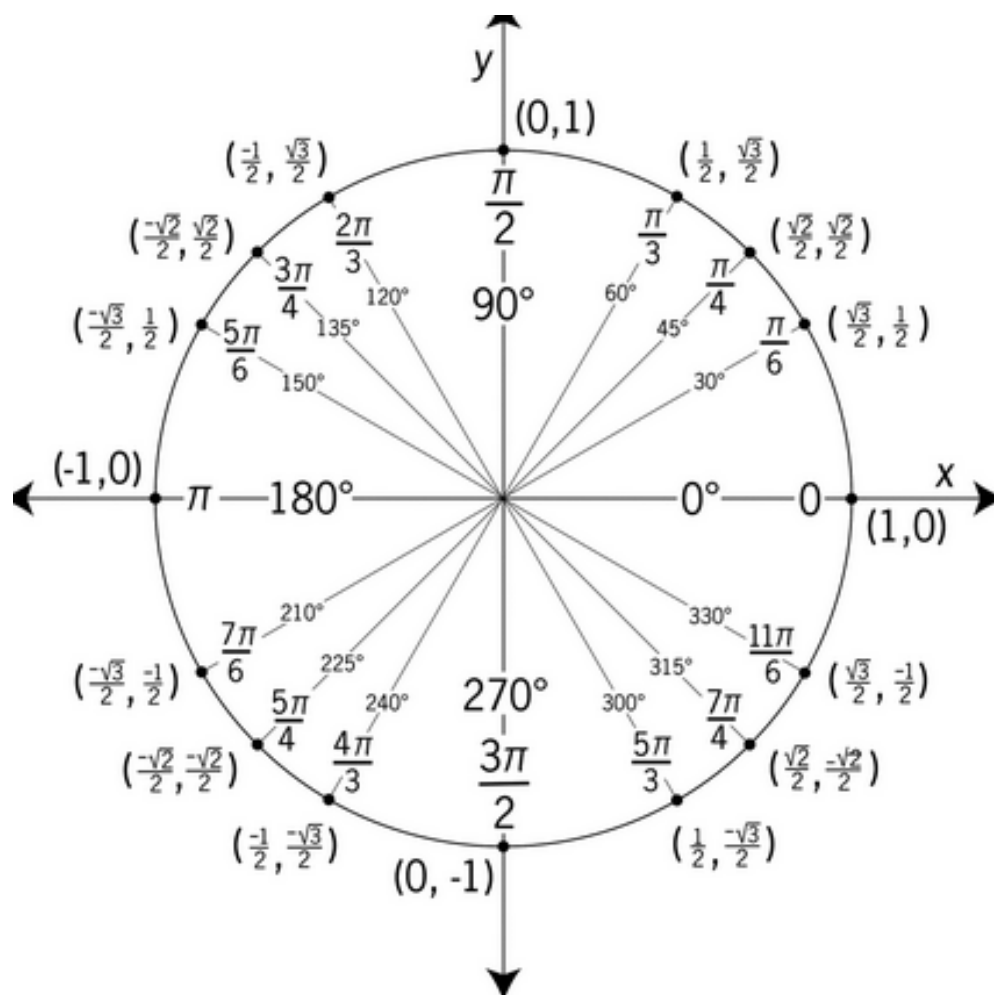
Unit circle song

<https://www.youtube.com/watch?v=YfclaUF2JqM>

Help you learn the unit circle!

<https://www.youtube.com/watch?v=ZsPyhyo16pg&feature=share>

The Unit Circle



Evaluating Trig Functions

*I could ask you any one of these on a quiz.

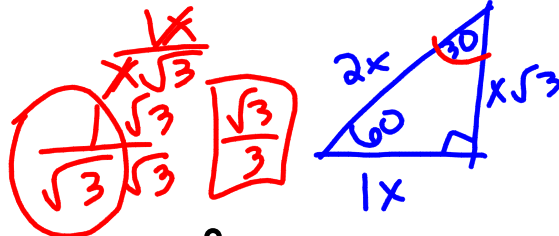
	sin	cos	tan	csc	sec	cot
0	0	1	0	und.	1	und.
30	$1/2$	$\sqrt{3}/2$	$\sqrt{3}/3$	2	$2\sqrt{3}/3$	$\sqrt{3}$
45	$\sqrt{2}/2$	$\sqrt{2}/2$	1	$\sqrt{2}$	$\sqrt{2}$	1
60	$\sqrt{3}/2$	$1/2$	$\sqrt{3}$	$2\sqrt{3}/3$	2	$\sqrt{3}/3$
90	1	0	und	1	und	0
180	0	-1	0	und	-1	und
270	-1	0	und	-1	und	0

Reciprocal Identities		
$\sin \theta = \frac{1}{\csc \theta}$	$\cos \theta = \frac{1}{\sec \theta}$	$\tan \theta = \frac{1}{\cot \theta}$
$\csc \theta = \frac{1}{\sin \theta}$	$\sec \theta = \frac{1}{\cos \theta}$	$\cot \theta = \frac{1}{\tan \theta}$

Quotient Identities	
$\tan \theta = \frac{\sin \theta}{\cos \theta}$	$\cot \theta = \frac{\cos \theta}{\sin \theta}$

*What is $\tan 30^\circ$? ^{OPP} _{ADJ}

*What is the $\cot 30^\circ$?
 $\sqrt{3}$



*What is $\csc 30^\circ$?

$\frac{1}{\sin 30}$ $\frac{1}{\frac{1}{2}}$ or $1 \div \frac{1}{2}$ $1 \cdot \frac{2}{1} = 2$

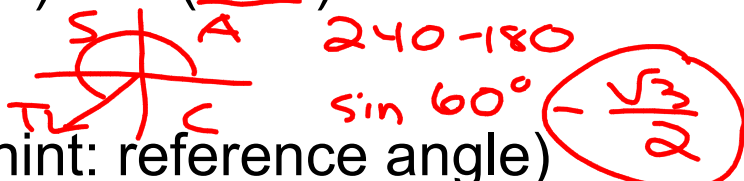
*What is $\sec 30^\circ$?

$\frac{1}{\cos 30}$ $\frac{1}{\frac{\sqrt{3}}{2}}$ or $1 \div \frac{\sqrt{3}}{2}$
 $1 \cdot \frac{2\sqrt{3}}{\sqrt{3}\sqrt{3}}$ $\frac{2\sqrt{3}}{3}$

Evaluating Trig Functions

1)

a) $\sin (240^\circ)$



$240 - 180$
 $\sin 60^\circ = -\frac{\sqrt{3}}{2}$

(hint: reference angle)

b) $\tan (240^\circ)$

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

Steps to evaluating any angle:

1) Find the reference angle.

2) Evaluate reference angle.

(Might need to draw a triangle)

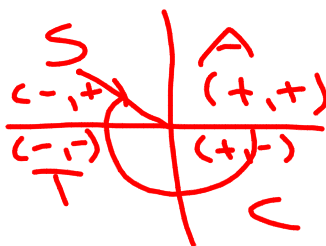
3) Is it positive or negative?

(All Students Take Calculus)

4) Put it all together!

Evaluating Trig Functions

a) $\tan(-240^\circ)$
 $\tan 60$



(hint: reference angle)

$$\tan 60 = \frac{\sin 60}{\cos 60} = \frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}} = \frac{\sqrt{3}}{2} \cdot \frac{2}{1} = \sqrt{3}$$

Evaluating Trig Functions

b) $\csc\left(\frac{17\pi}{6}\right)$
 $\csc = \frac{1}{\sin}$

$$\frac{1}{\sin \frac{\pi}{6}} = \frac{1}{\frac{1}{2}}$$

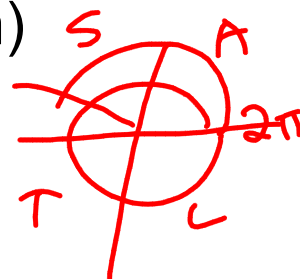
$$1 \div \frac{1}{2}$$

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

(hint: reference angle and think sin)

$$\frac{\pi}{6} \cdot \frac{180}{\pi} = 30$$

$$2 \frac{5}{6}$$





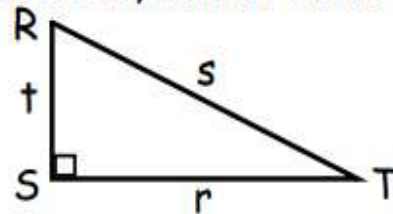
What occurs once in a minute,
twice in a moment,
but never in a thousand years?

Yellow WS (odds)

DLT

24. For right triangle $\triangle RST$ shown below, what is $\tan R$?

- F. r/s G. r/t H. t/r
J. t/s K. s/t



Last class's Homework

- ★ Page 870 #5-11 odd, 12-15, 17-23 odd
- ★ Fill in the chart on the back of the
Unit circle (purple ws).

Did you finish?

Tonight's Homework

- ★ Page 871 #24-31, 35-37
- ★ Complete the worksheet from class.