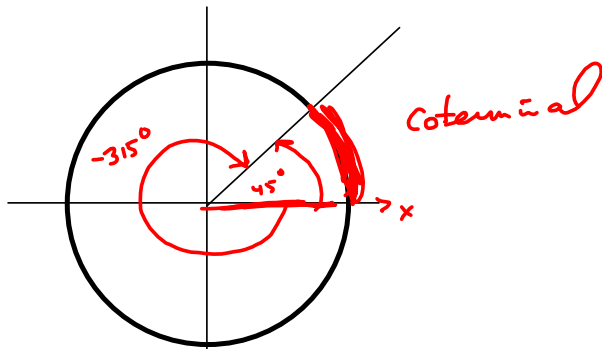


<https://harryzaims.com/>



Circumference of circle of radius r is $2\pi r$

$$\theta \text{ in radians} = \frac{s}{r} = \frac{\text{arc length}}{\text{radius}}$$

Example: 45° angle.
 $r=1$

$$\theta = \frac{\frac{2\pi}{8}}{1} = \frac{\pi}{4} \leftarrow \frac{\pi}{4} \text{ (Radians!)}$$

Radians will be the preferred measurement.

2π radians to go around the circle. 360 degrees to go around the circle.

So, in a sense:

$$2\pi \text{ is } 360^\circ$$

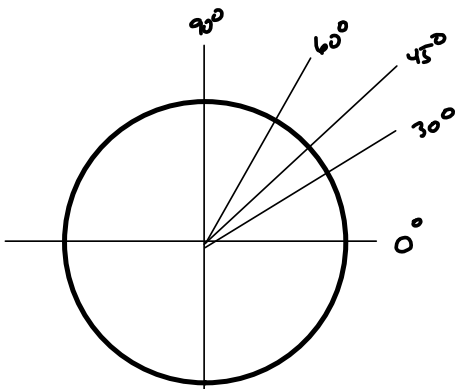
$$\frac{\pi}{180^\circ} = \frac{2\pi}{360^\circ} \text{ is "1"}$$

$$\left(\frac{\pi}{4} \text{ radians}\right) \left(\frac{180^\circ}{\pi \text{ radians}}\right) = \left(\frac{\pi}{4}\right) \left(\frac{180^\circ}{\pi}\right) = 45^\circ$$

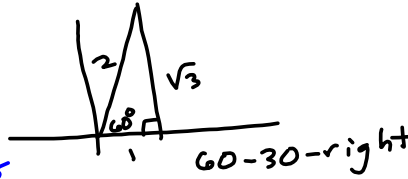
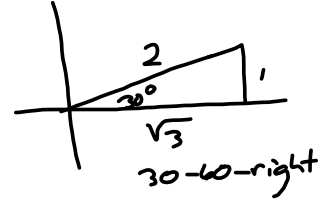
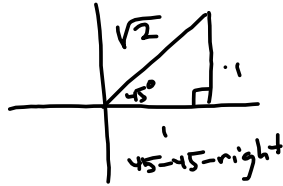
$$(30^\circ) \left(\frac{\pi}{180^\circ}\right) = \frac{\pi}{6} \text{ Radians.}$$

" π radians"

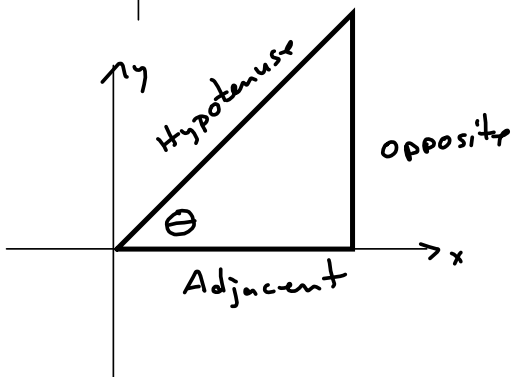
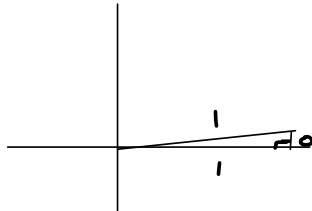
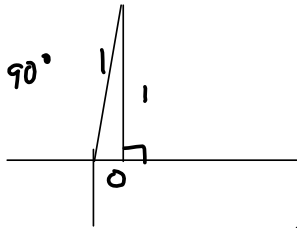
$$\text{Memorize: } \frac{\pi}{6} = 30^\circ, \frac{\pi}{4} = 45^\circ, \frac{\pi}{3} = 60^\circ \quad (0 = 0^\circ, \frac{\pi}{2} = 90^\circ)$$



Memorize two triangles



Quadrant Angles give "degenerate triangles" that are useful.



θ = angle = "theta"

3 main trig funcs:

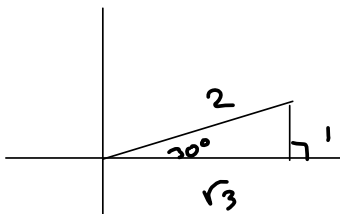
sine $\sin \theta = \frac{O}{H}$

cosine $\cos \theta = \frac{A}{H}$

tangent $\tan \theta = \frac{O}{A} = \text{slope!}$

SOHCAHTOA

For a 30° angle:



$\sin 30^\circ = \frac{1}{2}$

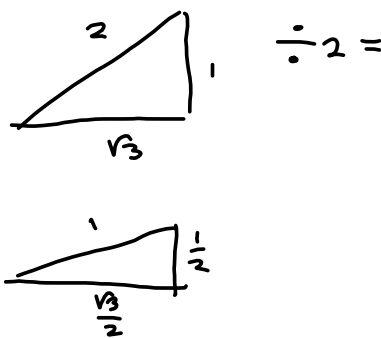
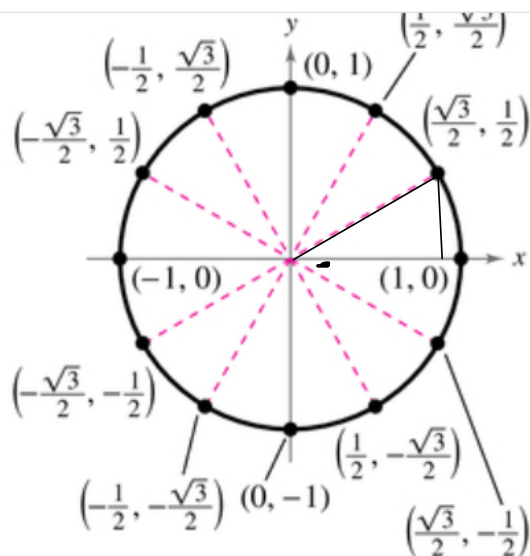
$\cos 30^\circ = \frac{\sqrt{3}}{2}$

$\tan 30^\circ = \frac{1}{\sqrt{3}} = \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{\sqrt{3}} = \frac{\sqrt{3}}{3}$

Denominator Rationalized

Either one

This is a way to cheat most of the memorization in Section 1.2.



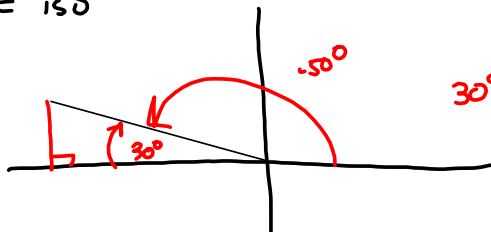
$\sin \theta = y$ -coordinate of corresponding point on the unit circle

$\theta = 30^\circ \quad \sin \theta = \frac{O}{H} = \frac{1}{2} = \frac{1}{2} \leftarrow$

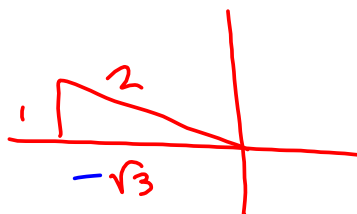
$\cos \theta = \frac{A}{H} = \frac{\sqrt{3}/2}{1} = \frac{\sqrt{3}}{2} \leftarrow$

$\theta = 150^\circ$

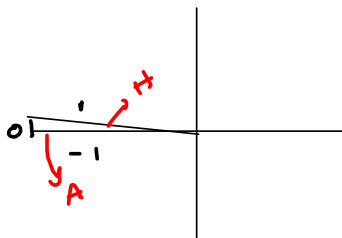
Drop a perpendicular to x-axis



30° is reference angle (to x-axis)



$\sin 150^\circ = \frac{1}{2}, \cos 150^\circ = -\frac{\sqrt{3}}{2}, \tan 150^\circ = \frac{1}{-\sqrt{3}} = -\frac{1}{\sqrt{3}}$

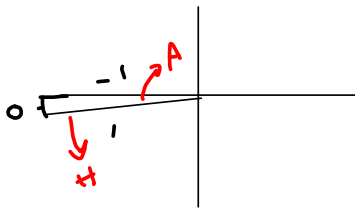
$180^\circ :$ 

$$\sin 180^\circ = \frac{0}{1} = 0$$

$$\cos 180^\circ = \frac{-1}{1} = -1$$

$$\tan 180^\circ = \frac{0}{-1} = 0$$

Degenerate
 Δ 's helpful
Quadrant Angles



See Syllabus

Working on Schedule, now.

I'll send you an e-mail.

I will post today's and every day's notes on harryzaims.com