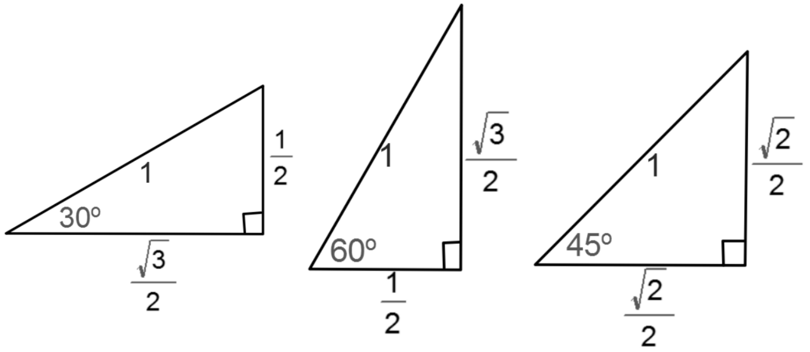
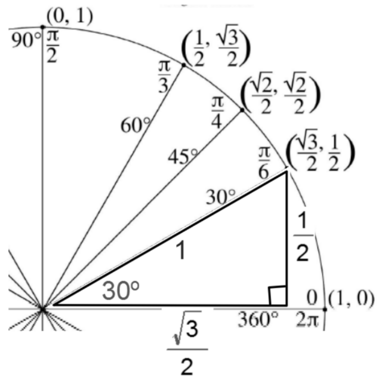
The Unit Circle involves the angles in Special Right Triangles
which means it probably involves the sides too!



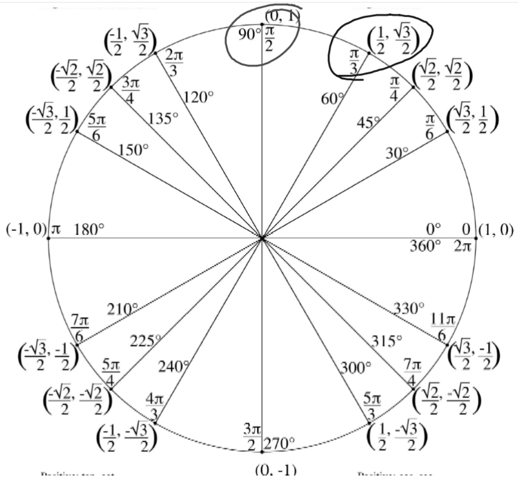
Finding Sinθ, Cosθ, and Tanθ using the Unit Circle



Cosθ = x (x-coordinate)

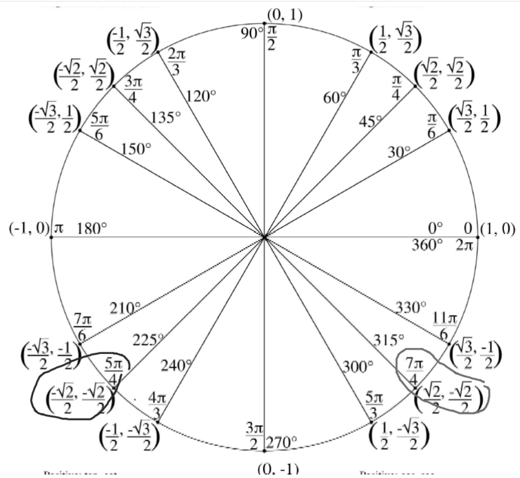
Sinθ = y (y-coordinate)

$$\text{Tan}\theta = \frac{\text{Opp Leg}}{\text{Adj Leg}} = \frac{y}{x}$$



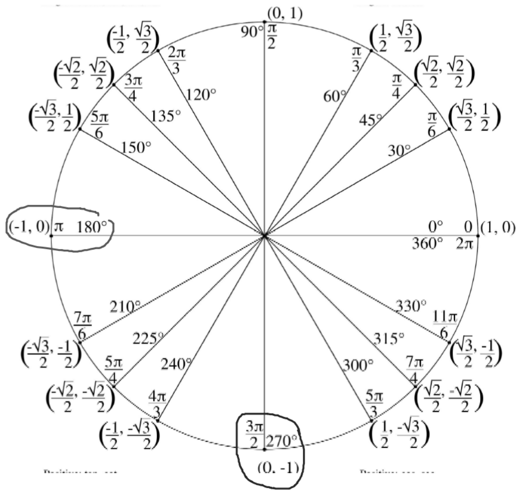
$$\text{Tan}\left(-\frac{11\pi}{3}\right)$$
$$= \text{Tan}(\pi/3)$$
$$= \sqrt{3}$$
$$\frac{\frac{\sqrt{3}}{2}}{\frac{1}{2}}$$

$$\text{Tan}\,\frac{13\pi}{2} = \frac{1}{0}$$
undefind



$$\text{Cos}\left(\frac{23\pi}{4}\right) = \frac{\sqrt{2}}{2}$$
$$\cos\left(\frac{7\pi}{4}\right)$$

$$\text{Sin}\left(-\frac{35\pi}{4}\right) = -\frac{\sqrt{2}}{2}$$
$$\sin\left(\frac{5\pi}{4}\right)$$



Sin $\frac{15\pi}{2}$

$\sin\left(\frac{3\pi}{2}\right) = -1$

Cos 75π

$\cos(\pi) = -1$

You will have a quiz next week over filling out the Unit Circle!

Use the given infomation to find the measure of all the anlges θ that meet each condition.

θ in degrees ($0° \leq \theta \leq 360°$)

1. $\cos\theta = -\frac{1}{2}$

   120° & 240°

2. $\sin\theta = \frac{\sqrt{2}}{2}$

   45°, 135°

3. $\cos\theta = 1$

   0° & 360°

4. $\sin\theta = -\frac{\sqrt{3}}{2}$

   240° & 300°

5. $\sin\theta = 0$

   0°, 180°, 360°

Use the given infomation to find the measure of all the anlges θ that meet each condition.

θ in degrees ($0° \leq \theta \leq 360°$)

6. $\tan\theta = -1$

   $\frac{\frac{\sqrt2}{2}}{\frac{\sqrt2}{2}}$ or $\frac{-\frac{\sqrt2}{2}}{-\frac{\sqrt2}{2}}$

   135° & 315°

7. $\tan\theta = \sqrt{3} \longrightarrow \frac{\frac{\sqrt3}{2}}{\frac12}$ or $\frac{-\frac{\sqrt3}{2}}{-\frac12}$

   60° & 240°

8. $\tan\theta = -\frac{\sqrt{3}}{3}$

   $\frac{-\frac12}{\frac{\sqrt3}{2}}$ or $\frac{\frac12}{-\frac{\sqrt3}{2}}$

   150° & 330°

9. Given $\underline{Cos\theta > 0}$ and $\underline{Sin\theta = -\frac{1}{2}}$ find θ

These two statements tell us that x is positive and y is negative, therefore, θ is in the 4th Quadrant

In the 4th Quadrant Sinθ = -1/2 at 330º

$\theta = 330°$

10. Given $\boxed{90° \le \theta \le 180°}$ this tells us θ is in the 2nd Quadrant

If $\underbrace{Cos\theta = -\frac{\sqrt{3}}{2}}$ find $Sin\theta = \frac{1}{2}$

In the 2nd Quadrant θ must be 150º to get this value for Cos.

Now do Sin 150º

You can now finish Hwk #30

Practice Sheet

Sec 13-2

Suppose the you get on a Ferris Wheel at the spot marked with the star. Sketch the graph of your height above/below the spot marked with the star as the Ferris Wheel turns.