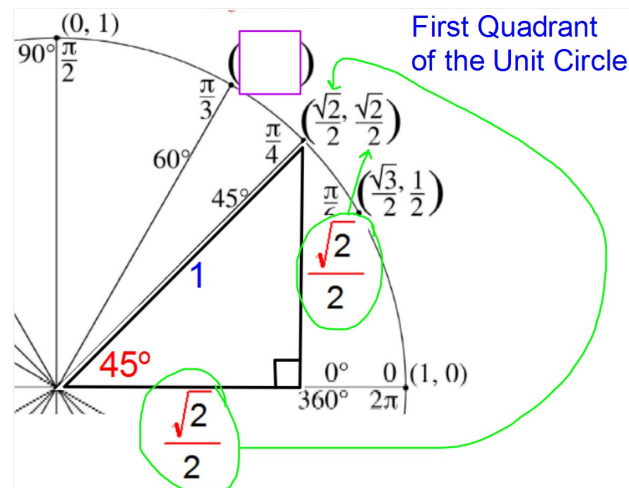
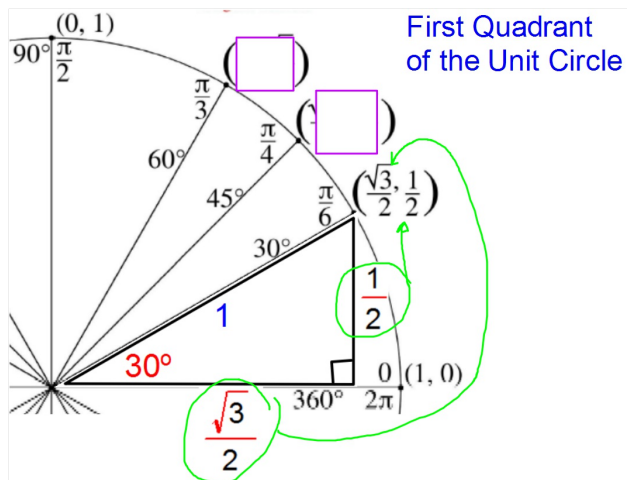
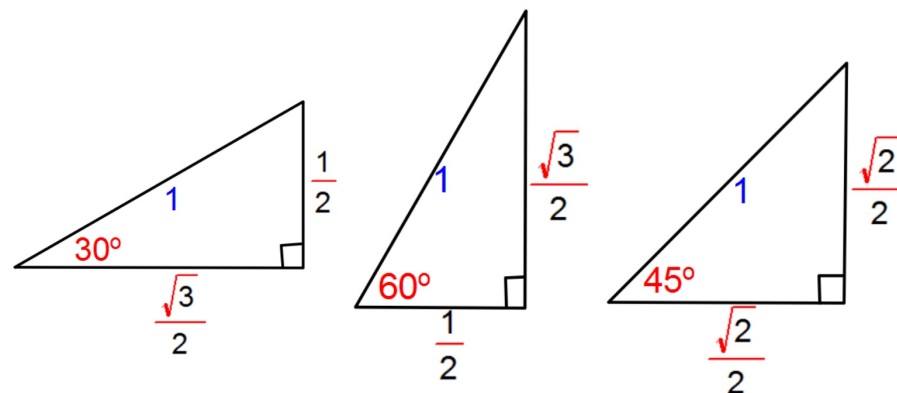
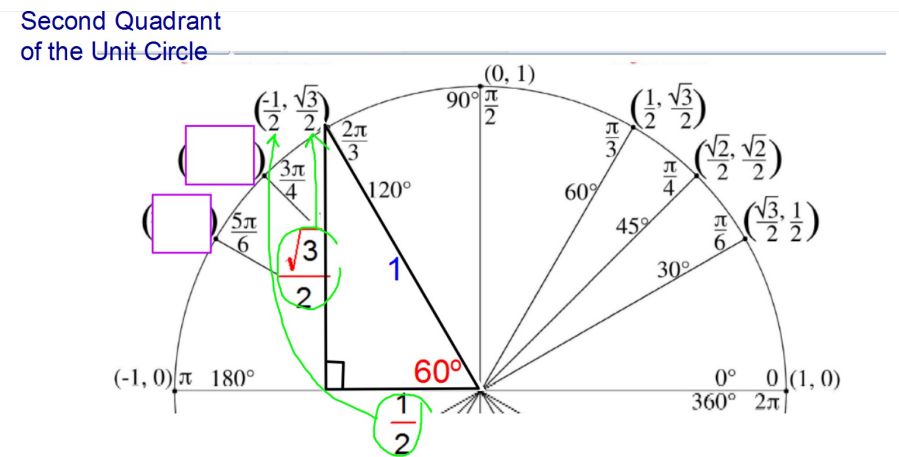
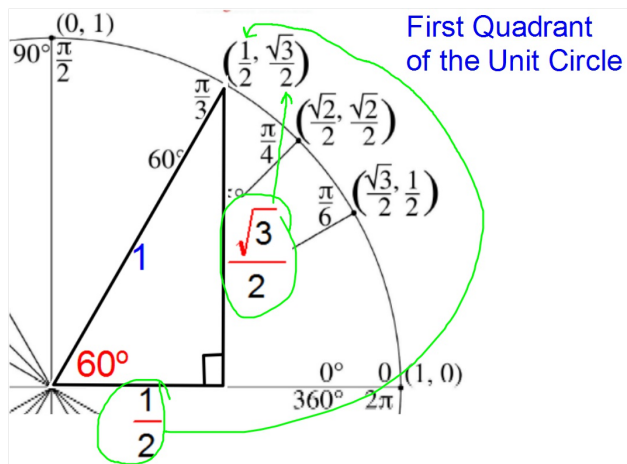
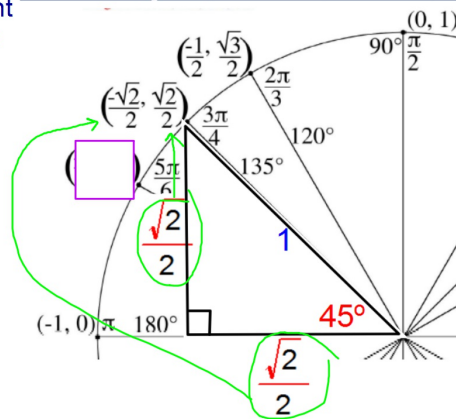


The Unit Circle involves the angles in Special Right Triangles which means it probably involves the sides too!

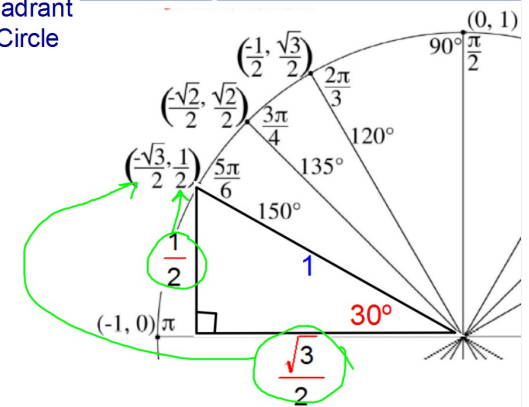




Second Quadrant of the Unit Circle

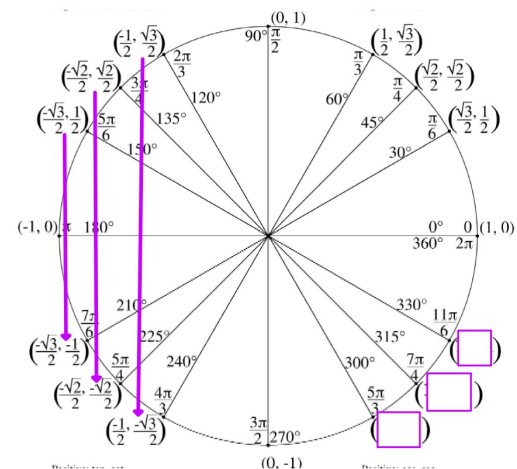
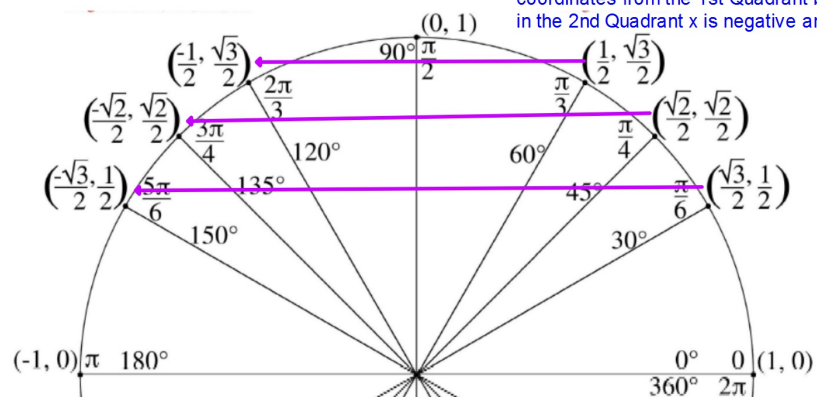


Second Quadrant of the Unit Circle

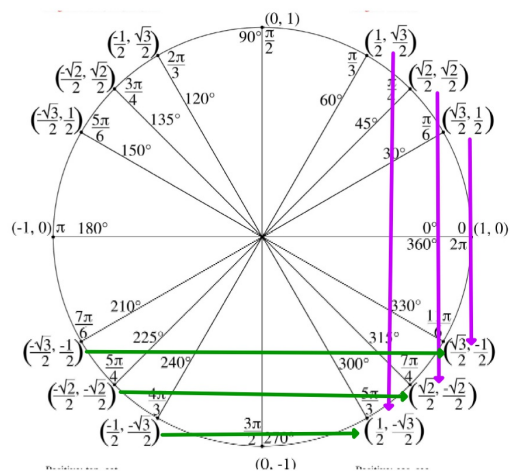


What patterns do you notice?

The coordinates in the 2nd Quadrant are just reflections over the y-axis of the coordinates from the 1st Quadrant but in the 2nd Quadrant x is negative and y is pos.

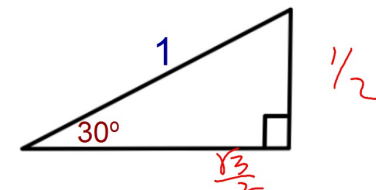


Coordinates in the 3rd Quadrant are just reflections of the coordinates from the 2nd Quadrant over the x-axis. But in the 3rd Quadrant both x and y are neg.



Coordinates in the 4th Quadrant are just reflections of the coordinates from the 3rd Quadrant over the y-axis or reflections of the coordinates from the 1st Quadrant over the x-axis. But in the 4th Quadrant x is pos and y is neg.

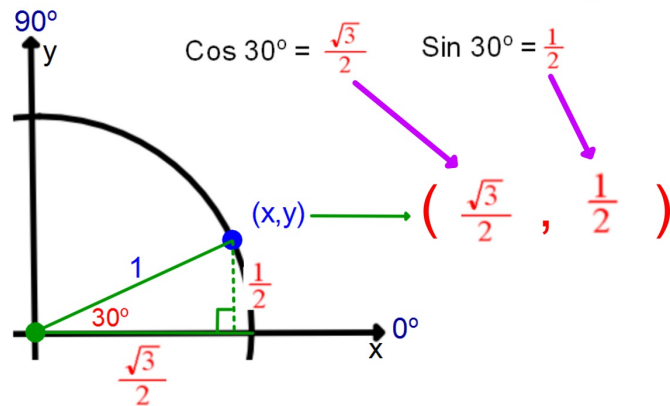
Find the exact length of each leg



Find the exact value of each:

$$\cos 30^\circ = \frac{\sqrt{3}}{2} = \frac{\sqrt{3}}{2} \quad \sin 30^\circ = \frac{1}{2} = \frac{1}{2}$$

What are the coordinates of the blue point?



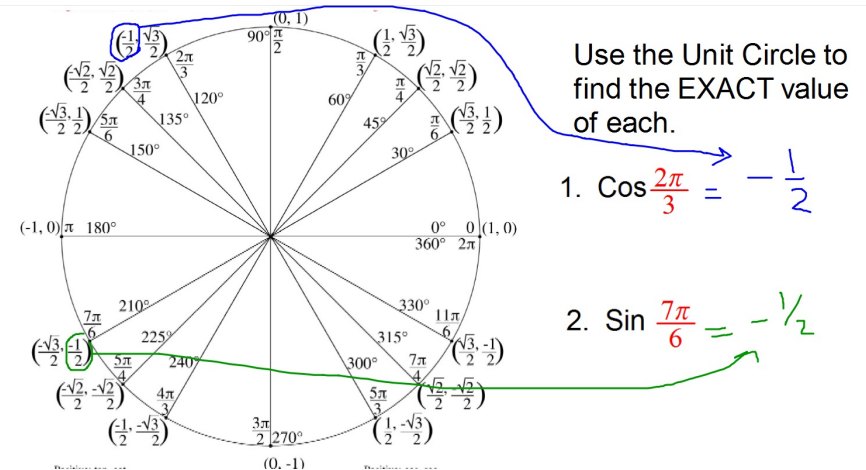
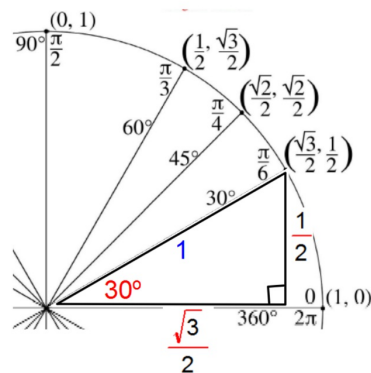
Coordinates on the Unit Circle:

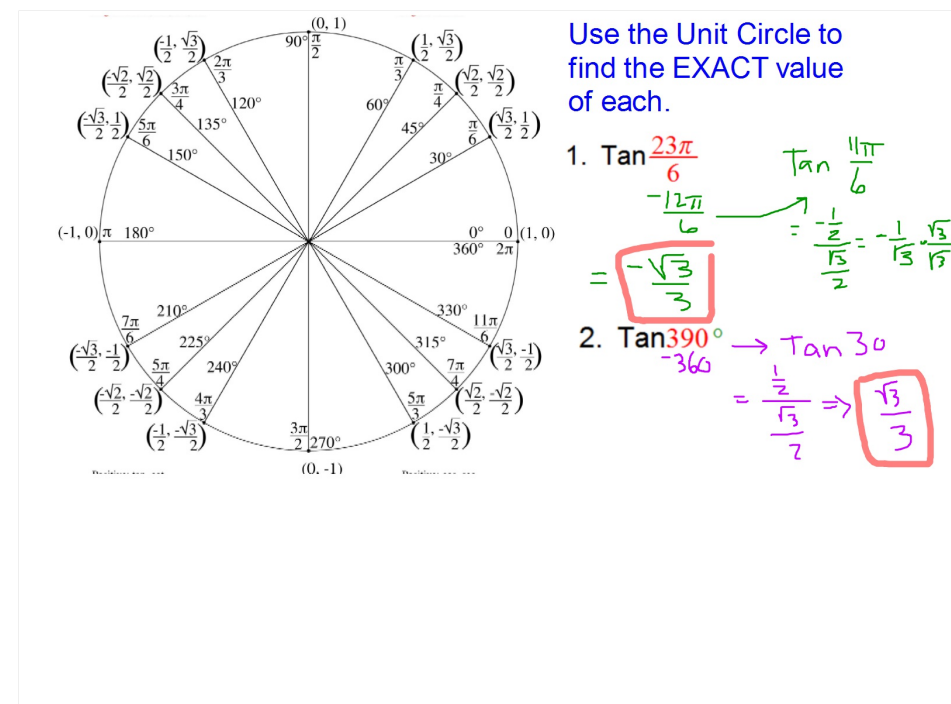
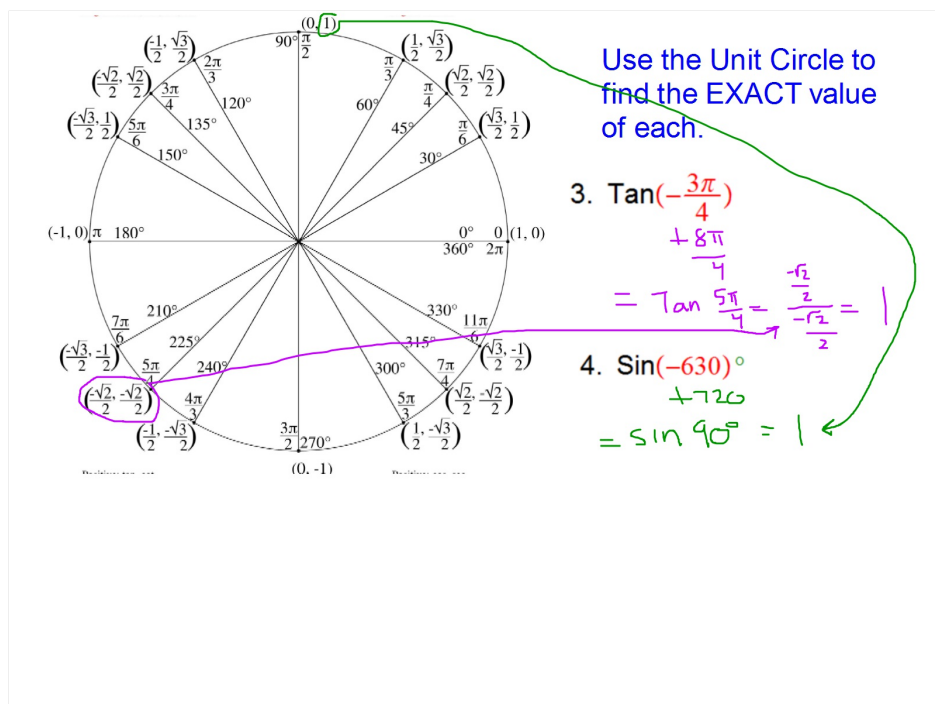
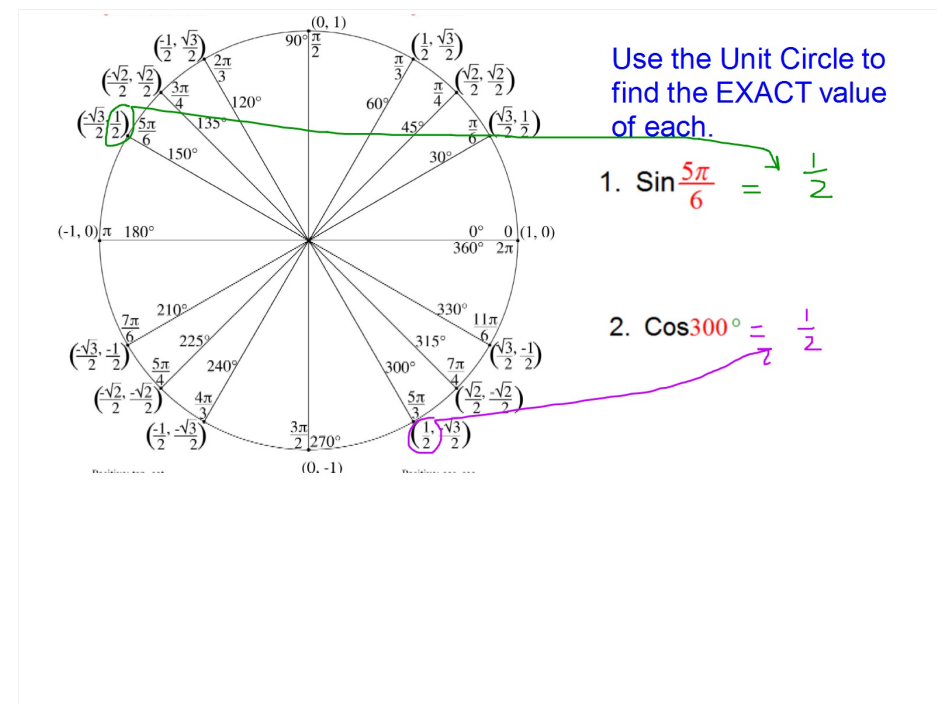
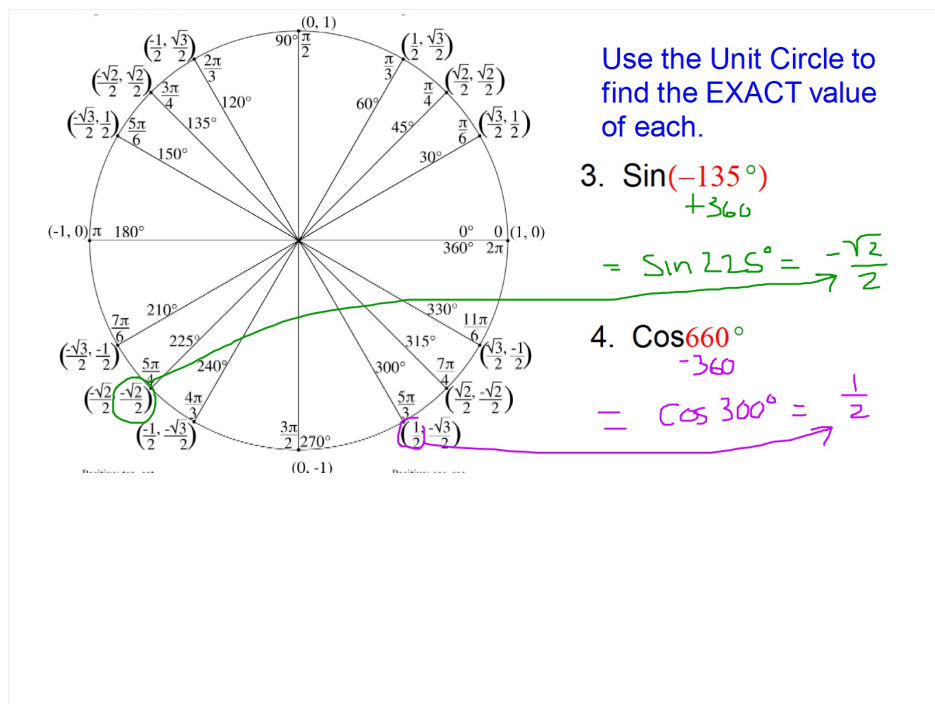
$$(x, y) \longrightarrow (\cos\theta, \sin\theta)$$

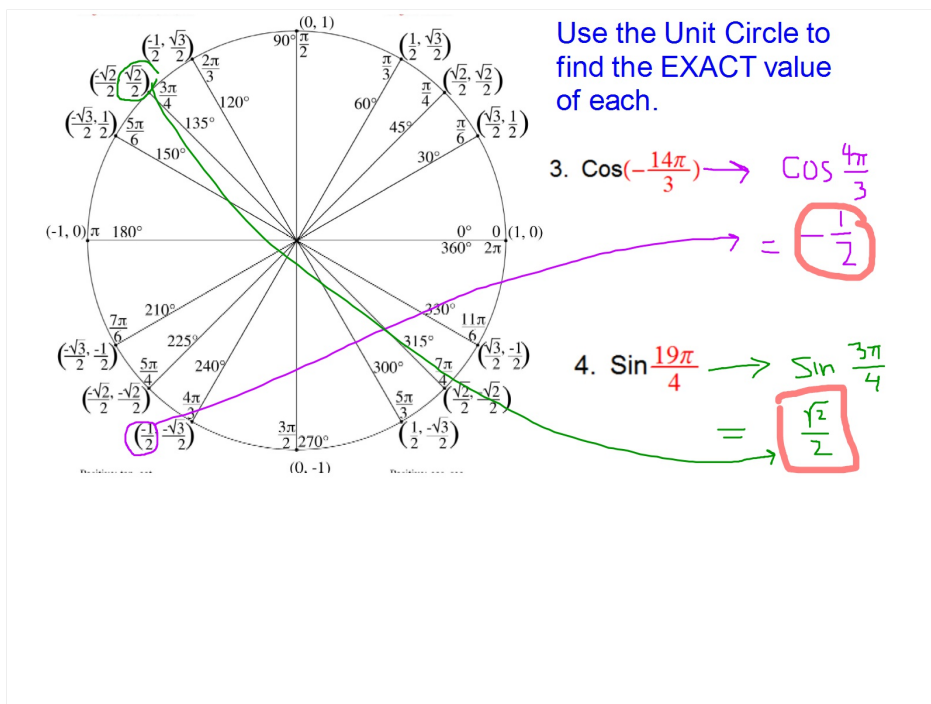
Actually, $\cos\theta$ is defined as $\frac{x}{r}$

but since $r=1$: $\cos\theta = \boxed{}$

Finding $\sin\theta$, $\cos\theta$, and $\tan\theta$ using the Unit Circle







Use the given information to find the measure of all the angles θ that meet each condition.

θ in degrees ($0^\circ \leq \theta \leq 360^\circ$)

1. $\sin \theta = \frac{1}{2}$
where is the y-coord $1/2$?
 30° and 150°
2. $\cos \theta = -\frac{\sqrt{2}}{2}$ where is the x-coord $-\frac{\sqrt{2}}{2}$?
 135° and 225°
3. $\sin \theta = -1$
where is the y-coord -1 ?
 270°
4. $\cos \theta = \frac{\sqrt{3}}{2}$ where is the x-coord $\frac{\sqrt{3}}{2}$?
 30° and 330°
5. $\cos \theta = 0$
where is the x-coord 0 ?
 90° and 270°

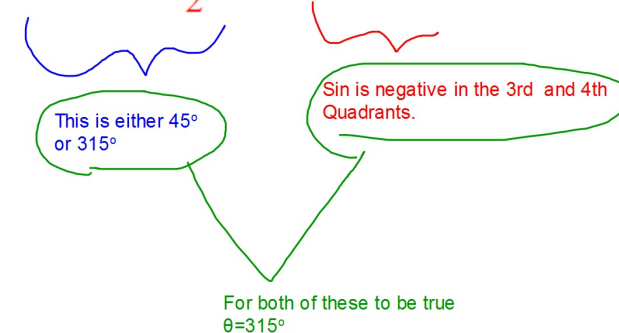
Use the given information to find the measure of all the angles θ that meet each condition.

θ in degrees ($0^\circ \leq \theta \leq 360^\circ$)

Tan is Neg where x&y have different signs, quad II and IV

1. $\tan \theta = 1$
Where x and y have the same coordinates
 45° and 225°
2. $\tan \theta = -\sqrt{3}$ ← this is the result of the y-coord having the $\frac{\sqrt{3}}{2}$ & the x-coord having $1/2$
 120° and 300°
3. $\tan \theta = \text{undefined}$
Tan is undefined when x is zero
 90° and 270°
4. $\tan \theta = \frac{\sqrt{3}}{3}$ ← this is the result of the x-coord having the $\frac{\sqrt{3}}{2}$ & the y-coord having $1/2$
Tan is Pos where x&y have the same signs, quad I and III
 30° and 210°

Given $\cos \theta = \frac{\sqrt{2}}{2}$ and $\sin \theta < 0$, find θ



10. Given $90^\circ \leq \theta \leq 180^\circ$ ← This defines the 2nd Quadrant

If $\cos\theta = -\frac{\sqrt{3}}{2}$ find $\sin\theta$

this is true at
 150° and 210°

For both of these to be true $\theta = 150^\circ$

$$\sin\theta = \sin 150^\circ = \frac{1}{2}$$

You can now finish Hwk #26 Sec 13-2

Pages 722-723

Problems 21, 22, 24-28, 34, 35

Due Tomorrow