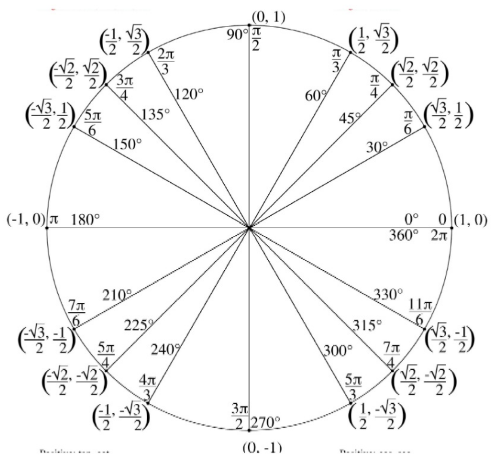
Using the Unit Circle:

How many different answers will there be for

Sinθ



Since the sin of an angle on the Unit Circle is just the y-coordinate of the points on the Unit Circle this is just asking for all the DIFFERENT y-coordinates!

The different y-coordinates on the Unit Circle are:

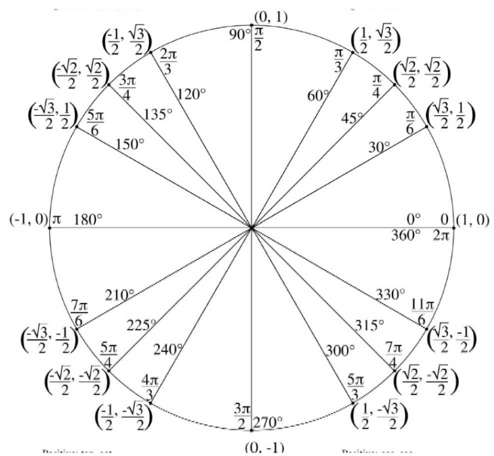
$$0,\ \pm\frac{1}{2},\ \pm\frac{\sqrt{2}}{2},\ \pm\frac{\sqrt{3}}{3},\ \pm 1$$

There are only 9 different answers that you will give when find the value of Sinθ using the Unit Circle.

Using the Unit Circle:

How many different answers will there be for

Cosθ



Since the cos of an angle on the Unit Circle is just the x-coordinate of the points on the Unit Circle this is just asking for all the DIFFERENT x-coordinates!

The different x-coordinates on the Unit Circle are:

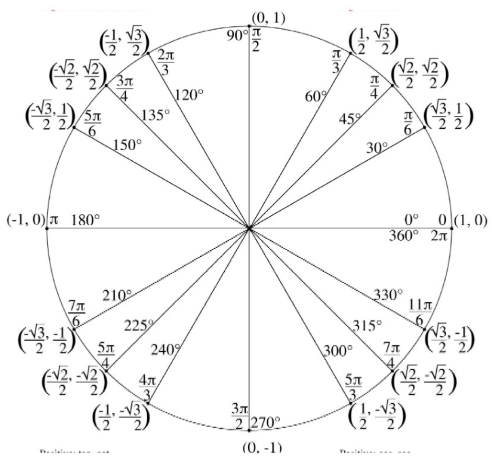
$$0,\ \pm\frac{1}{2},\ \pm\frac{\sqrt{2}}{2},\ \pm\frac{\sqrt{3}}{3},\ \pm 1$$

There are only 9 different answers that you will give when find the value of Cosθ using the Unit Circle. These are all the same answers that you will use to answer Sinθ

Using the Unit Circle:

How many different answers will there be for

Tanθ



Since the tan of an angle on the Unit Circle is just the ratio of y/x of the points on the Unit Circle this is just asking for all the DIFFERENT y/x ratios.

$$\frac{0}{\pm 1} = \boxed{0}$$

$$\frac{\pm\frac{1}{2}}{\pm\frac{\sqrt{3}}{2}} = \pm\frac{1}{\sqrt{3}}\cdot\frac{\sqrt{3}}{\sqrt{3}} = \boxed{\pm\frac{\sqrt{3}}{3}}$$

$$\frac{\pm\frac{\sqrt{2}}{2}}{\pm\frac{\sqrt{2}}{2}} = \boxed{\pm 1}$$

$$\frac{\pm\frac{\sqrt{3}}{2}}{\pm\frac{1}{2}} = \boxed{\pm\sqrt{3}}$$

$$\pm\frac{1}{0} = \boxed{\text{undefined}}$$

These are the only 8 answers you'll give when finding Tanθ

For the next 8 questions use these directions:

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

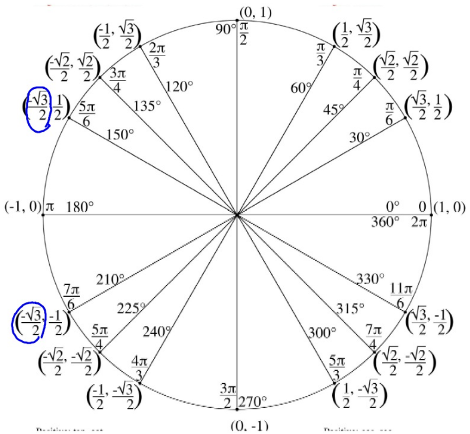
θ in degrees ($0° \le \theta \le 360°$)

1. $\cos\theta = -\frac{\sqrt{3}}{2}$

Neg x-coord

Quad II & III

$\theta = 150°$ & $210°$

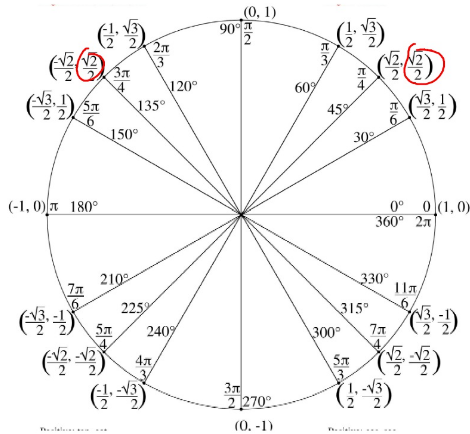


2. $\sin\theta = \frac{\sqrt{2}}{2}$

pos y-coord

Quad I & II

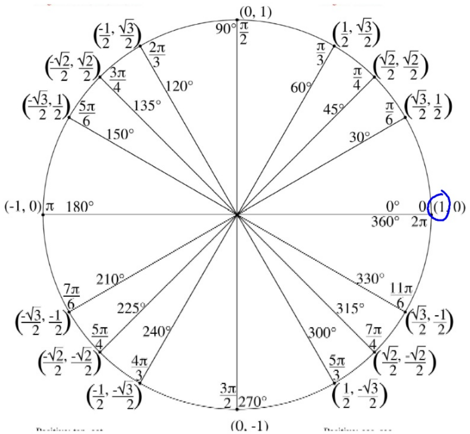
$45°$ & $135°$



3. $\cos\theta = 1$

x-coord = 1

$0°, 360°$

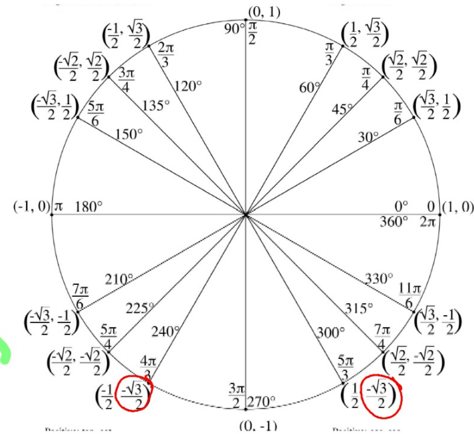


4. $\sin\theta = -\frac{\sqrt{3}}{2}$

neg y-coord

Quad III & IV

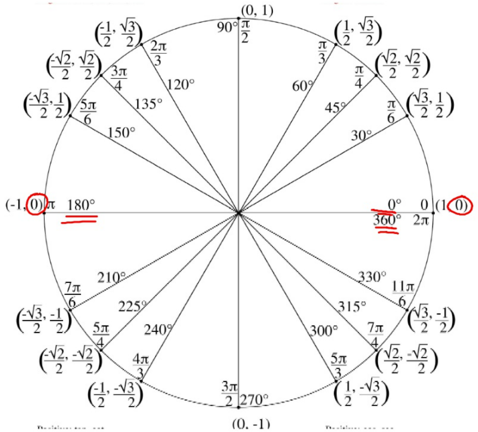
$240°$ & $300°$



5. $\sin\theta = 0$

$y=0 \rightarrow x\text{-axis}$

$0°, 180°, 360°$

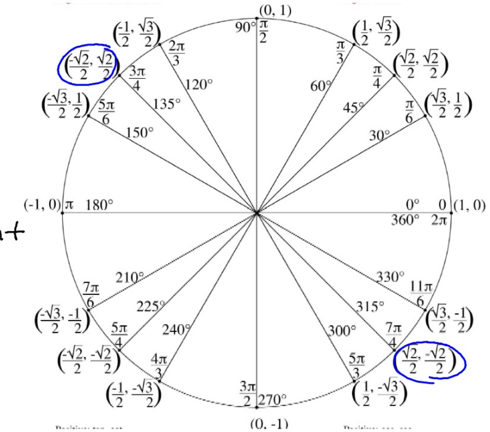


6. $\tan\theta = -1$

$\frac{Y}{X}$ is neg when signs are different Quad II & IV

$\frac{Y}{X} = -1$ when X & Y are opposites

$135°$ & $315°$



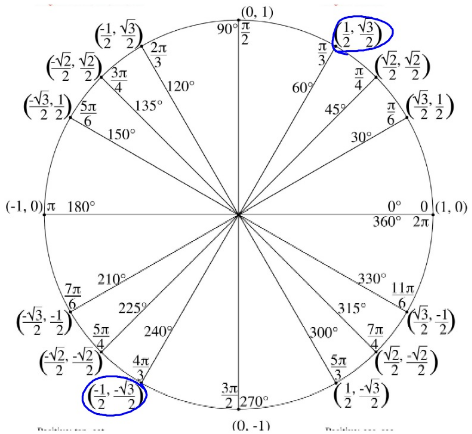
7. $\tan\theta = \sqrt{3}$

$\frac{Y}{X}$ is pos when X & Y are same sign

Quad I & III

$\frac{Y}{X} = \sqrt{3}$ when $\frac{Y=\frac{\sqrt{3}}{2}}{X=\frac{1}{2}}$

$60°$ & $240°$

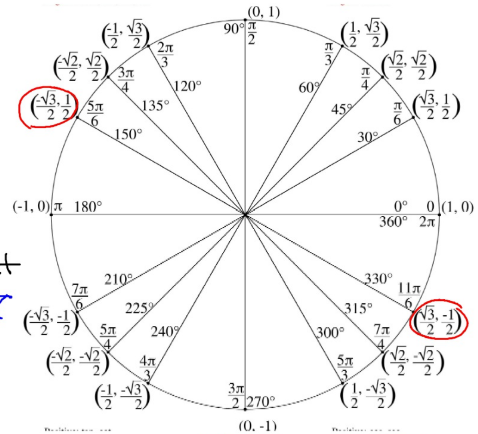


8. $\tan\theta = -\frac{\sqrt{3}}{3}$

$\frac{Y}{X}$ is neg when X & Y have different signs Quad II & IV

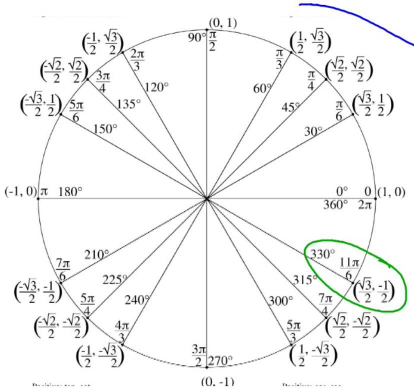
$\frac{Y}{X} = \frac{\sqrt{3}}{3}$ when $\frac{Y=\frac{1}{2}}{X=\frac{\sqrt{3}}{2}}$

$= \frac{1}{\sqrt{3}} \cdot \frac{\sqrt{3}}{3} = \frac{\sqrt{3}}{3}$



$150°$ & $330°$

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



x is pos

y is neg

$(+, -)$ Quad IV

y-coord $= -\frac{1}{2}$

330°

10. Given $90° \leq \theta \leq 180°$

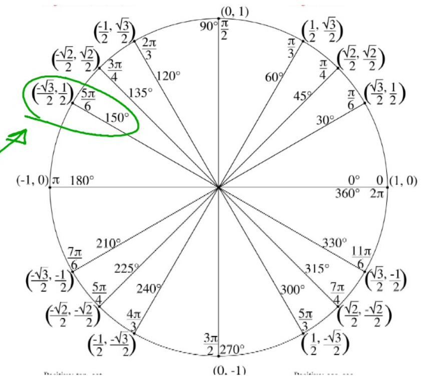
If $Cos\theta = -\frac{\sqrt{3}}{2}$ find $Sin\theta$

Quadrant II

x-coord is $-\frac{\sqrt{3}}{2}$

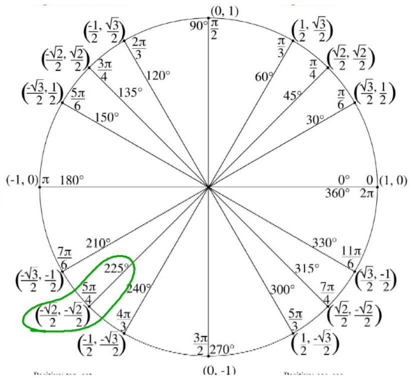
$Sin\,\theta = \frac{1}{2}$

Y-coord at this same point



Given $\tan\theta > 0$ and $\sin\theta = \frac{-\sqrt{2}}{2}$,

find $\cos\theta$.



$\tan > 0 \longrightarrow$ tan is pos when x & y have the same sign. Quad I & III

$\sin\theta = -\frac{\sqrt{2}}{2}$ in Quad III

$\cos\theta = -\frac{\sqrt{2}}{2} \longrightarrow$ x-coord at this same point.

You can now finish Hwk #17.

Practice Sheet: Using the Unit Circle

Due Monday, April 15, 2019

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.