1.8 The Unit Circle

TABLE 2 Values of Trig Functions for Various Quadrantal Angles

	sin θ	cos θ	tan θ	cot θ	sec θ	csc θ
0°	0	1	0	undefined	1	undefined
90°	1	0	undefined	0	undefined	1
180°	0	−1	0	undefined	−1	undefined
270°	−1	0	undefined	0	undefined	−1

1.8 The Unit Circle

Essential Question:

How do I find coordinates of points on the unit circle?

Can you fill in the angles (in radians & degrees) on the unit circle?

1.8 The Unit Circle

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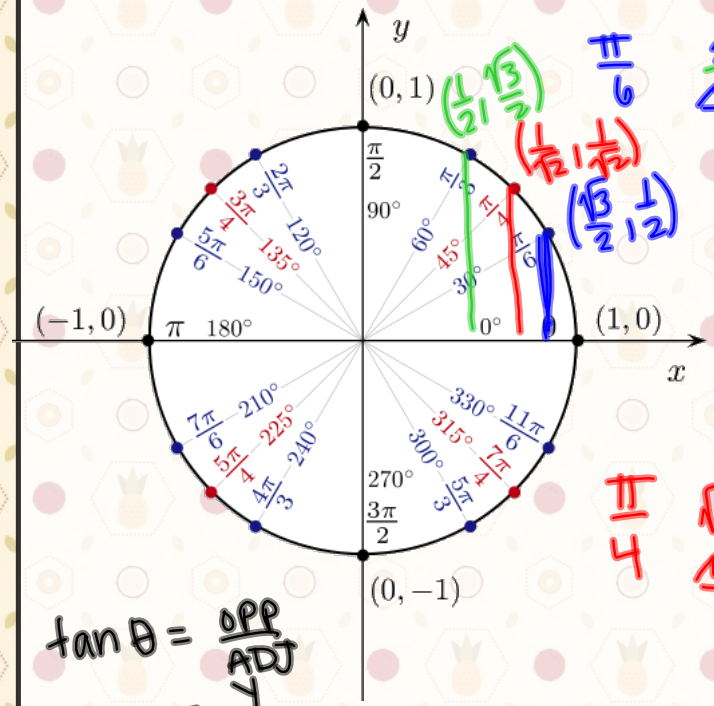


$\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$ $\left(\frac{1}{\sqrt{2}}, \frac{1}{\sqrt{2}}\right)$ $\left(\frac{\sqrt{3}}{2}, \frac{1}{2}\right)$

$\frac{\pi}{6}$

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

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

$\tan 30 = \frac{1}{\sqrt{3}}$

unit circle

Radius = 1

$y = \sin$

$x = \cos$

$\frac{\pi}{4}$

$\sin \frac{\pi}{4} = \frac{1}{\sqrt{2}}$

$\cos \frac{\pi}{4} = \frac{1}{\sqrt{2}}$

$\tan \theta = \frac{OPP}{ADJ}$

$= \frac{y}{x}$

$\boxed{\frac{\sin\theta}{\cos\theta} = \frac{y}{x} = \tan\theta}$

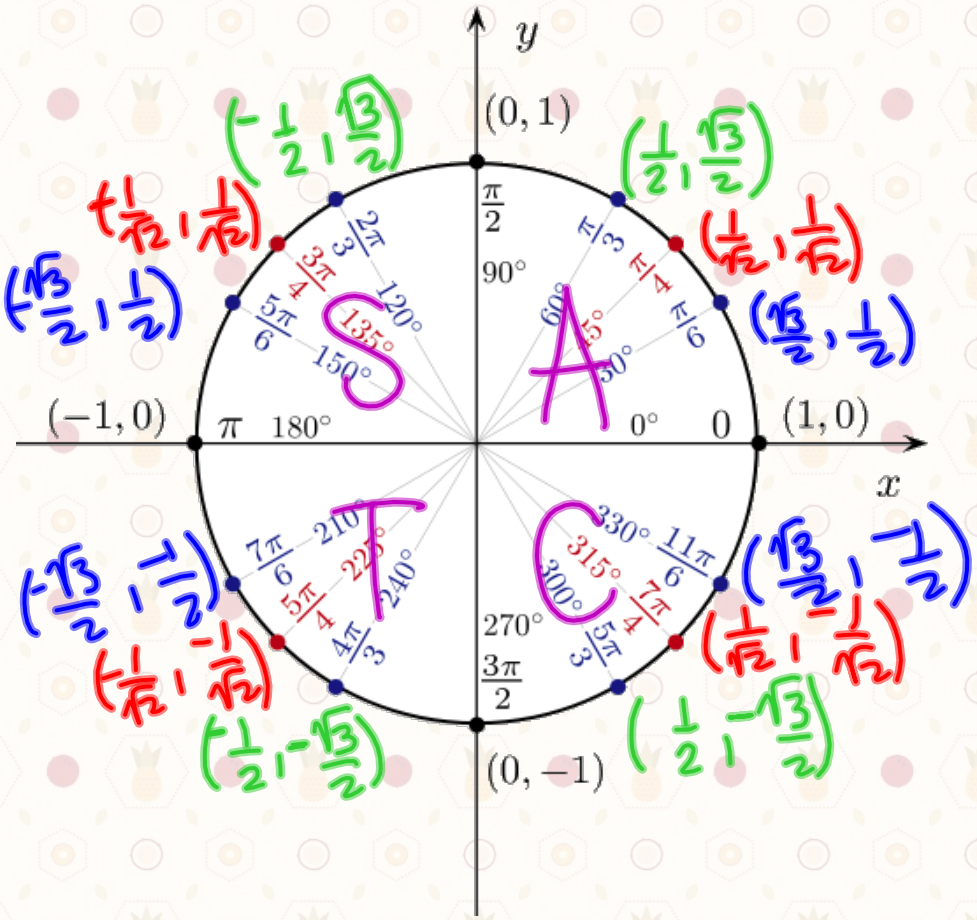
$\frac{\pi}{3}$

$\sin \frac{\pi}{3} = \frac{\sqrt{3}}{2}$

$\cos \frac{\pi}{3} = \frac{1}{2}$

1.8 The Unit Circle

Essential Question: How do I find coordinates of points on the unit circle?



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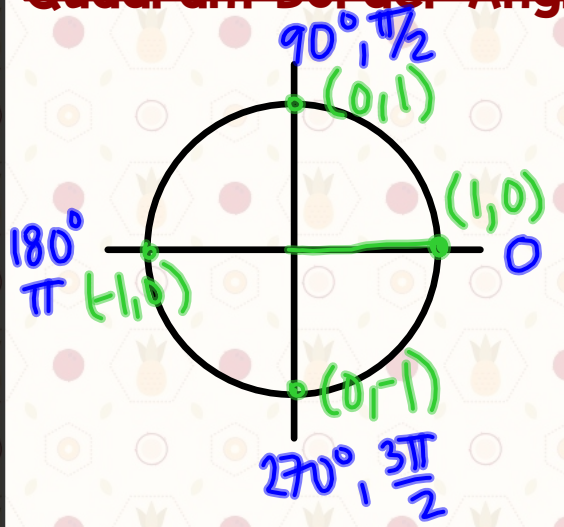
Essential Question: How do I find coordinates of points on the unit circle?

Quadrant Border Angles



cos ⇒ x ex. $\cos\frac{\pi}{2} = 0$
(0, 1)

sin ⇒ y ex. $\sin\pi = 0$
(-1, 0)

tan ⇒ $\frac{y}{x}$ ex. $\tan\frac{3\pi}{2} = \frac{y}{x} = \frac{-1}{0}$ $\boxed{\text{und}}$

	S	C	T
0	0	1	0
π/2	1	0	U
π	0	-1	0
3π/2	-1	0	U

ex. $\csc\frac{\pi}{2} = \frac{1}{1} = 1$
sin $\frac{1}{1}$

ex $\cot 0 = \boxed{\text{und}}$
$\frac{1}{0}$

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Essential Question: How do I find coordinates of points on the unit circle?