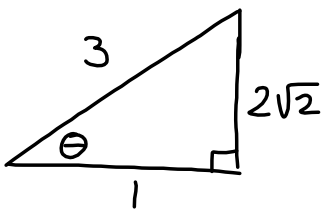
Pre 4.2 building unit circle

39) $\cos\theta = \frac{1}{3}$ adj / hyp



$1^2 + x^2 = 3^2$

$x^2 = 8$

$x = \sqrt{8}$

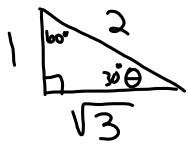
a) $\sin\theta = \frac{2\sqrt{2}}{3}$

b) $\tan\theta = 2\sqrt{2}$

c) $\sec\theta = 3$

d $\csc(90^\circ - \theta) = 3$

53) a) $\sin\theta = \frac{1}{2}$



$\theta = 30^\circ \quad \frac{\pi}{6}$

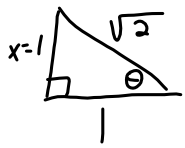
b) $\csc\theta = 2$

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

$\theta = 30^\circ$

58 b) $\sec\theta = \sqrt{2} \quad \frac{hyp}{adj}$

$\theta = 45^\circ \quad \frac{\pi}{4}$



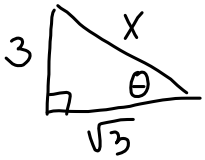
$x^2 + 1^2 = (\sqrt{2})^2$

$x^2 + 1 = 2$

$x^2 = 1$

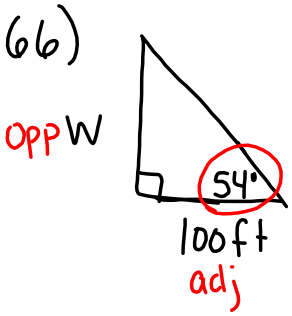
$x = \sqrt{1}$

a) $\cot\theta = \frac{\sqrt{3}}{3} \quad \frac{adj}{opp}$



$\theta = 60^\circ \quad \frac{\pi}{3}$

66)



$\tan 54^\circ = \frac{W}{100}$

$100 \tan 54^\circ = W$

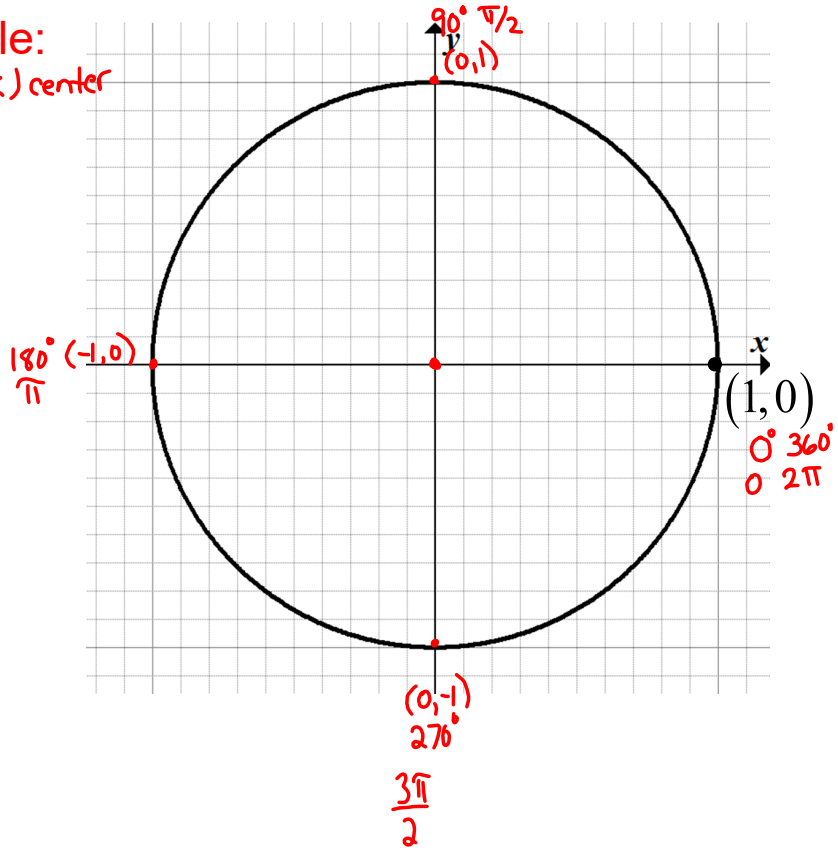
$W = 137.6$ ft

Equation of the Circle:

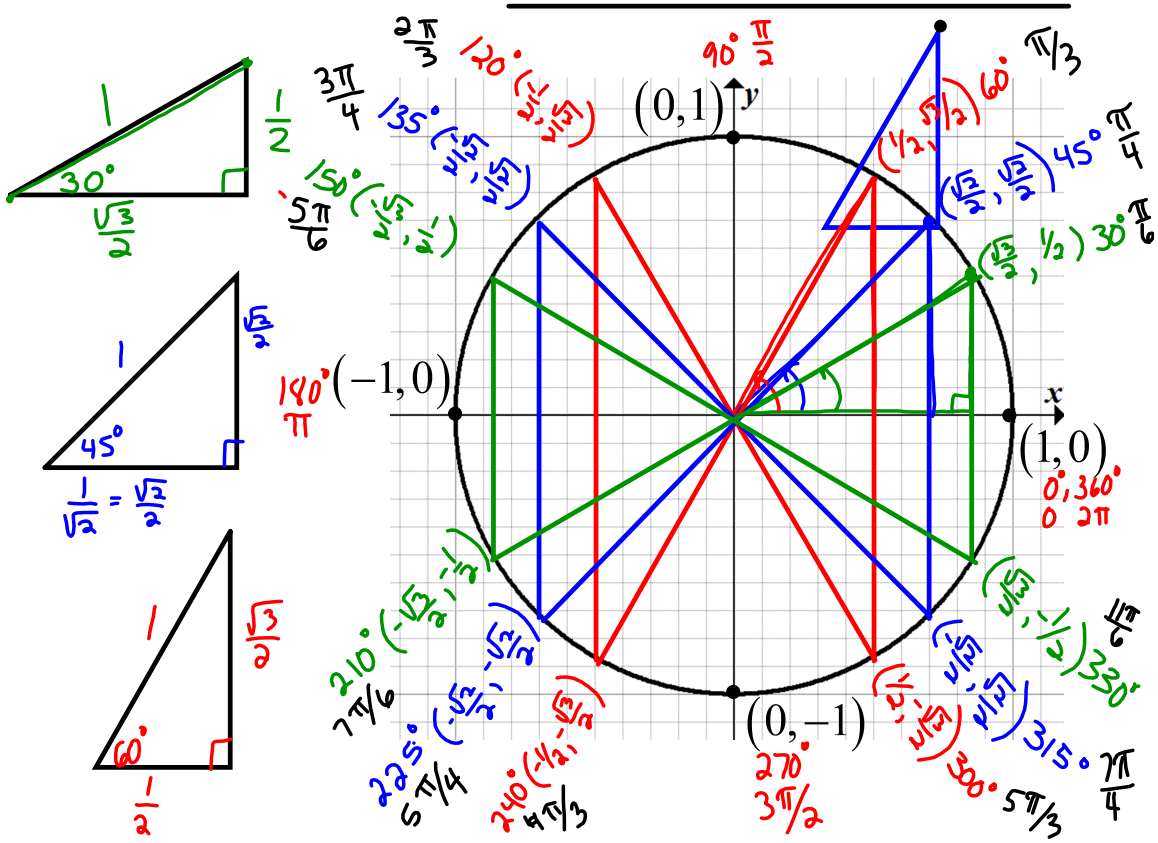
$(x-h)^2+(y-k)^2=r^2$ (h,k) center

$x^2+y^2=1$

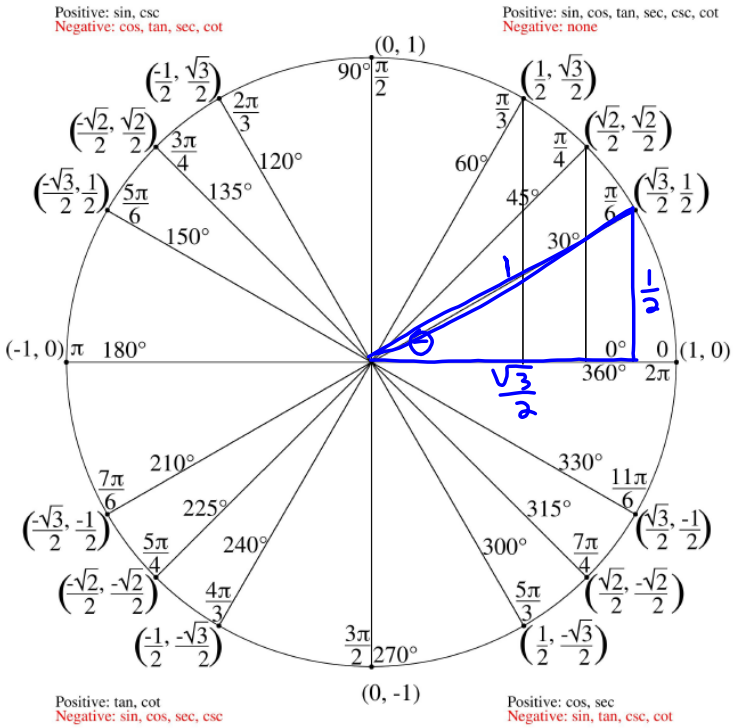
What are the other intercepts?
Label those points.



Equation of the circle: _____



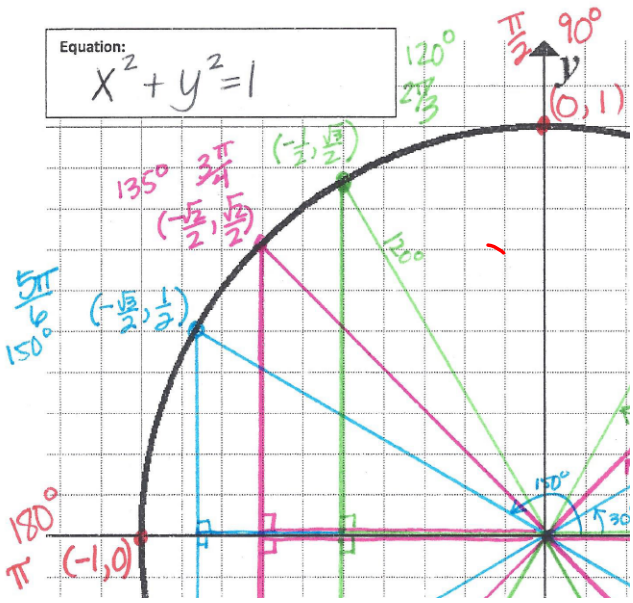
Let's use our unit circle to answer some questions...



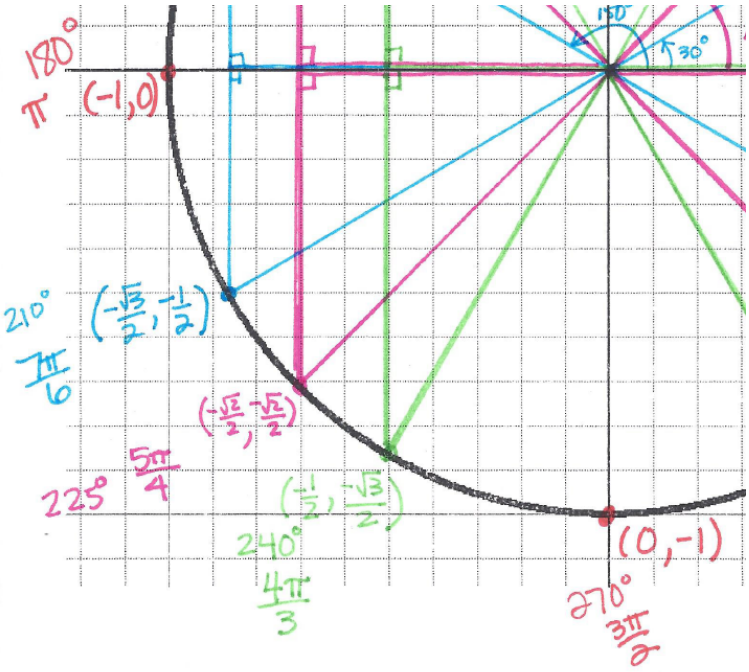
$\sin\theta = \frac{\frac{1}{2}}{1} = \frac{1}{2}$

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

1. What is the exact value of $\sin 135^\circ$? $= \frac{\sqrt{2}}{2}$

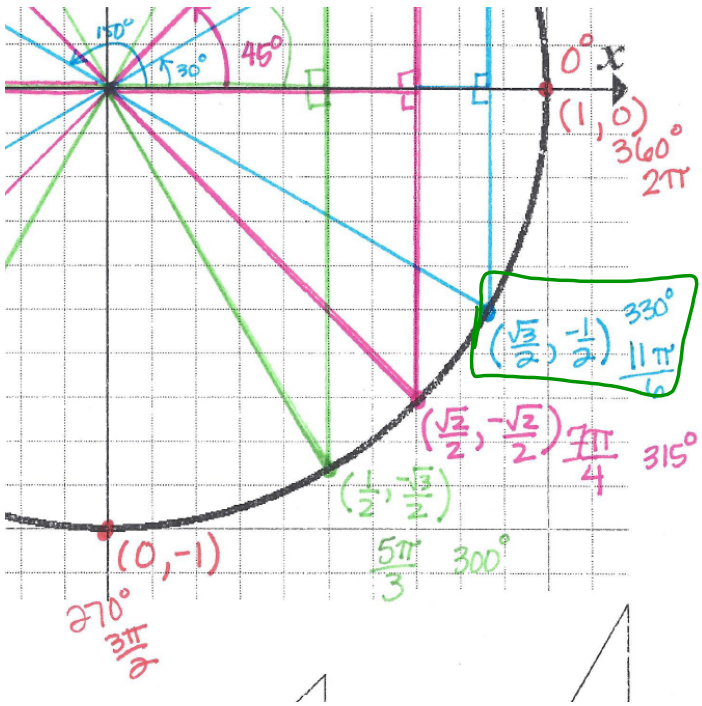


2. What is the exact value of $\cos\frac{4\pi}{3}$? $= -\frac{1}{2}$



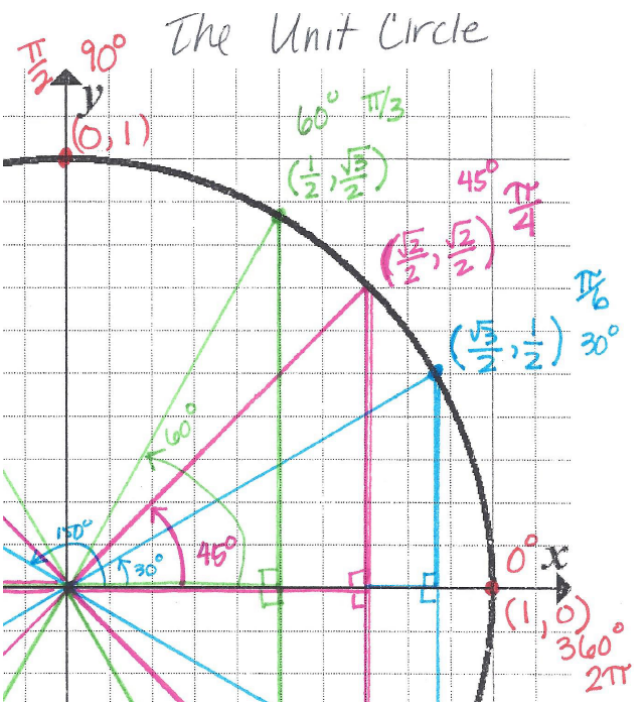
3. What is the exact value of $\tan 330^\circ$?

$\frac{opp}{adj} = \frac{y}{x} = \frac{\sin\theta}{\cos\theta} = \frac{\frac{-1}{\cancel{2}}}{\frac{\sqrt{3}}{\cancel{2}}} = \frac{-1}{\sqrt{3}}$



$\tan 330^\circ = -\frac{\sqrt{3}}{3}$

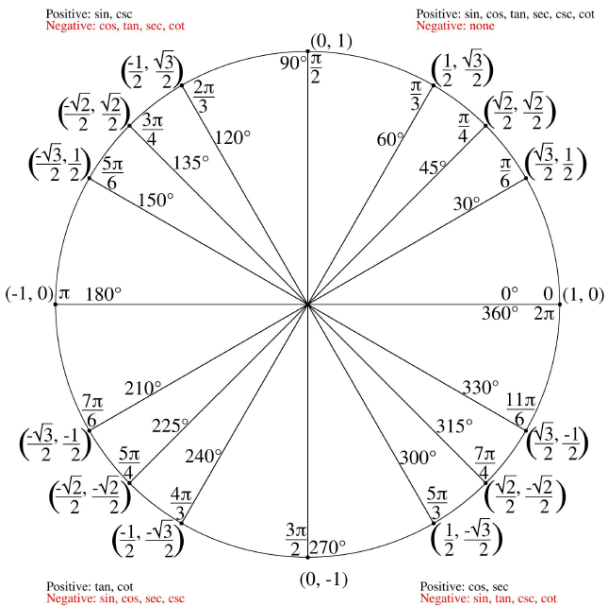
4. What is the exact value of $\sin\frac{\pi}{6}$?



$\sin\frac{\pi}{6} = \frac{1}{2}$

5. What is the exact value of $cos(-135^{o})$ = ?

$-\frac{\sqrt{2}}{2}$



34) $\sin\theta = -\frac{\sqrt{3}}{2}$ & θ is in Quad III

$\theta = 240°$

35) a) $\tan\theta < 0$ & $\cos\theta < 0$

II & IV II & III

II

6. What is the exact value of $\sin \frac{7\pi}{6}$? $= -\frac{1}{2}$

7. What is the exact value of $\tan 270^{\circ}$? $\frac{-1}{0} =$ undef

$(0, -1)$
(adj, opp)
$(\cos\theta, \sin\theta)$
(x, y)

8. In what quadrants is the tangent positive?

I & III

9. In what quadrants is the cosine negative?

II & III

What are some conclusions we can draw from the Unit Circle?

If you want a trick to help memorize the coordiantes watch this youtube video.

https://www.youtube.com/watch?v=LE6dmczMc68