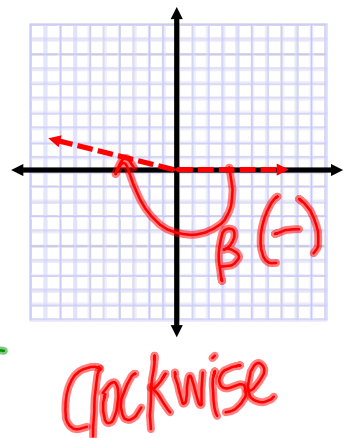
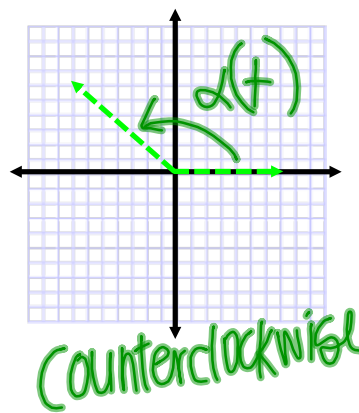
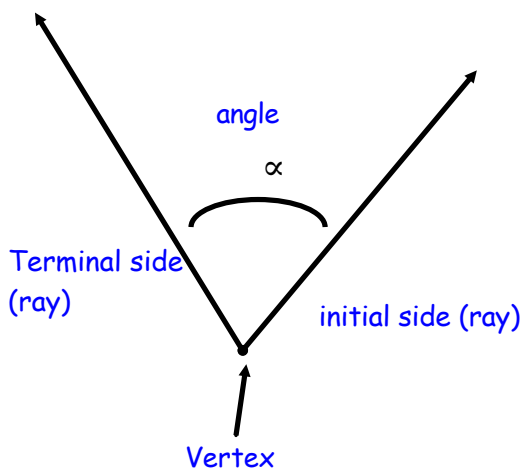


4.3 Day 1- Trigonometry Extendend

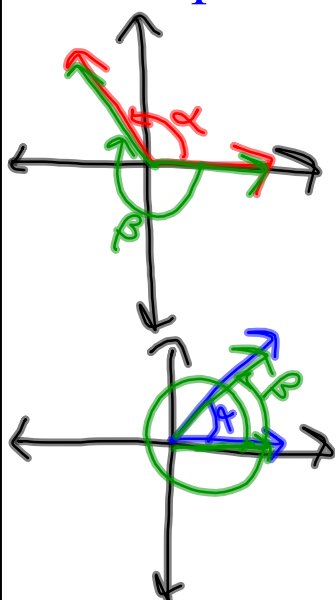
STandard position

Vocabulary Review:



coterminal angles: angles in standard position with the same terminal ray

example



$$30^\circ + 360^\circ = 390^\circ$$

$$30^\circ - 360^\circ = -330^\circ$$

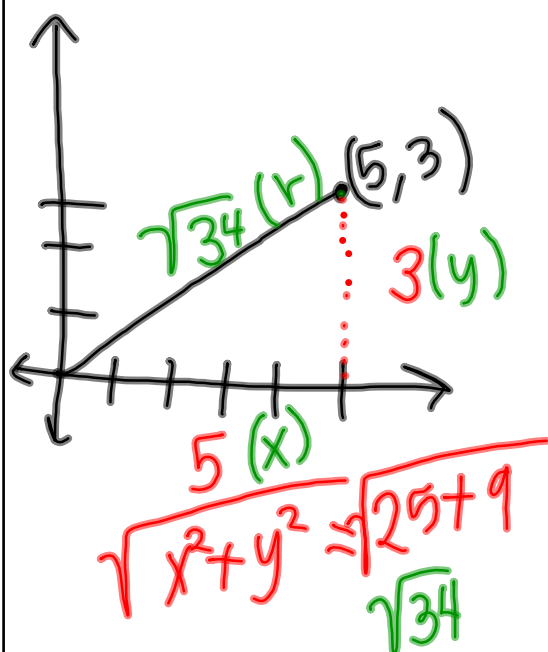
$$\frac{2\pi}{3} + \frac{2\pi}{1} \cdot 3 = \frac{2\pi}{3} + \frac{6\pi}{3} = \frac{8\pi}{3}$$

Find a positive and negative angle that are coterminal with

$$-150^\circ$$

$$\frac{2\pi}{3}$$

Let θ be the acute angle in standard position whose terminal side contains the point $(5, 3)$. Find all the trigonometric functions.



$$\sin \theta = \frac{3}{\sqrt{34}}$$

$$\tan \theta = \frac{3}{5}$$

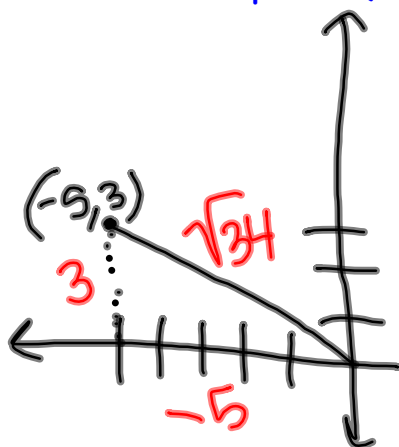
$$\cot \theta = \frac{5}{3}$$

$$\cos \theta = \frac{5}{\sqrt{34}}$$

$$\csc \theta = \frac{\sqrt{34}}{3}$$

$$\sec \theta = \frac{\sqrt{34}}{5}$$

Let θ be the ~~angle~~ angle in standard position whose terminal side contains the point $(-5, 3)$. Find all the trigonometric functions.



$$\sin \theta = \frac{3}{\sqrt{34}} \quad \cos \theta = \frac{-5}{\sqrt{34}}$$

$$\tan \theta = \frac{3}{-5} \quad \csc \theta = \frac{\sqrt{34}}{3}$$

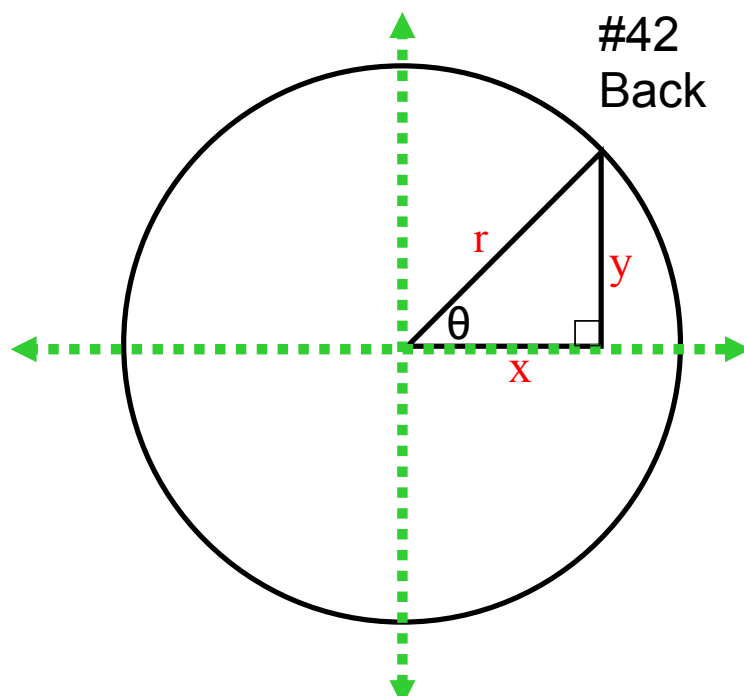
$$\cot \theta = \frac{-5}{3} \quad \sec \theta = \frac{\sqrt{34}}{-5}$$

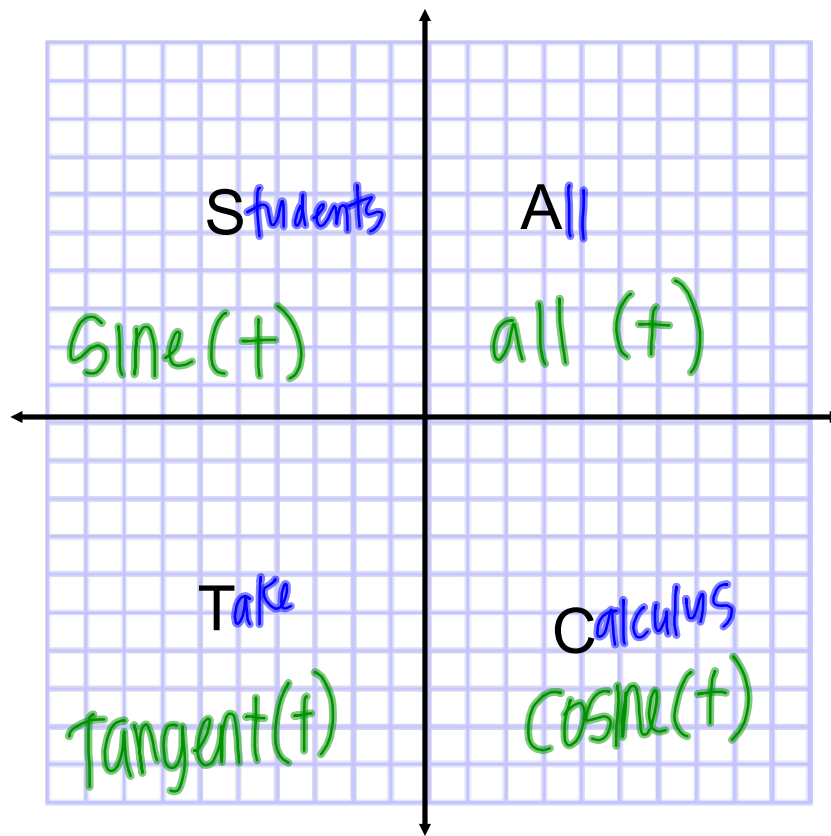
$$\sin \theta = \frac{\text{opp}}{\text{hyp}} = \frac{y}{r}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}} = \frac{x}{r}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}} = \frac{y}{x}$$

$$\sec \theta = \frac{\text{hyp}}{\text{adj}} = \frac{r}{x} \quad \csc \theta = \frac{\text{hyp}}{\text{opp}} = \frac{r}{y} \quad \cot \theta = \frac{\text{adj}}{\text{opp}} = \frac{x}{y}$$

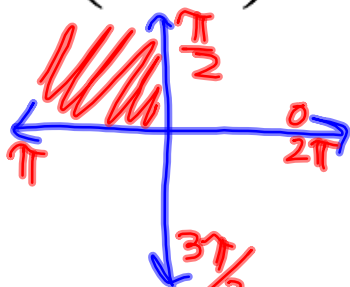




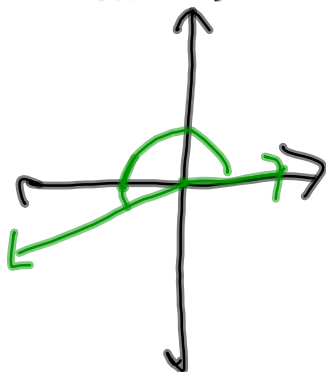
Give the sign without using a calculator

$$\left(\frac{\pi}{2}, \pi\right)$$

$$\begin{array}{ccc} \sin \theta & \cos \theta & \tan \theta \\ + & - & - \end{array}$$



$$\tan 192^\circ = +$$



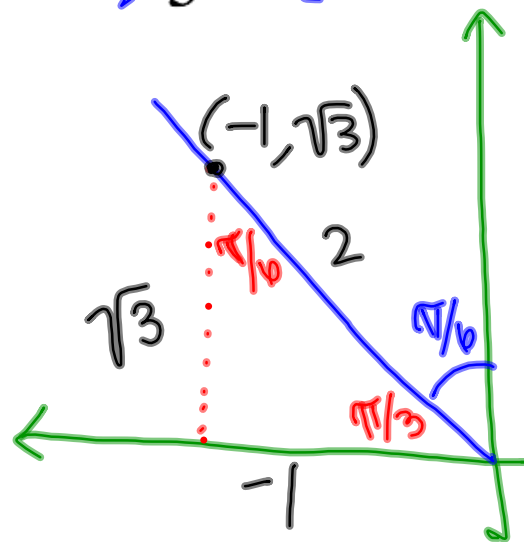
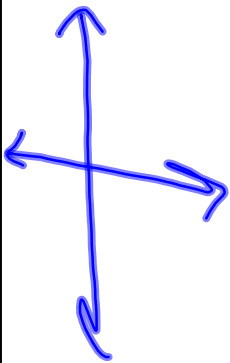
Choose a point on the terminal side of $\theta = \frac{2 \cdot 2\pi}{2 \cdot 3} - \frac{\pi \cdot 3}{2 \cdot 3} = \frac{4\pi}{6} - \frac{3\pi}{6}$

$(-1, 1)$

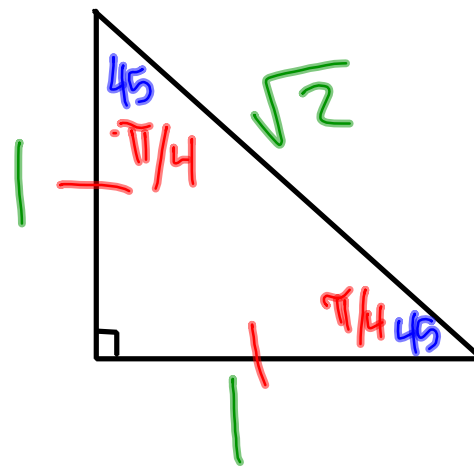
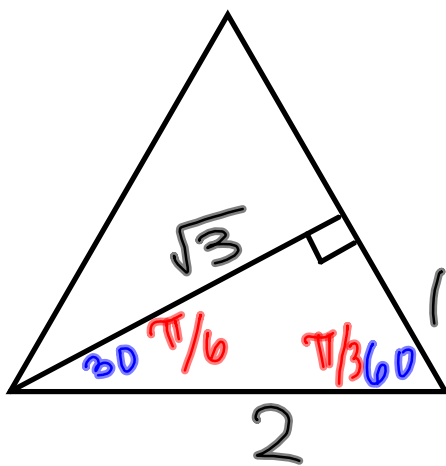
$(-1, \sqrt{3})$

$(-\sqrt{3}, 1)$

$\frac{115}{-90}$



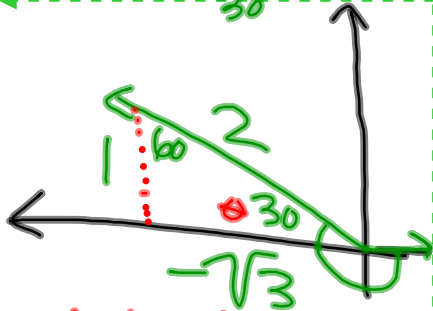
Special Triangles



Find the following without a calculator:

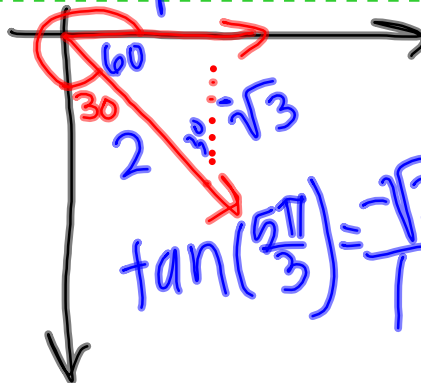
$$\sin(-210^\circ)$$

$$\frac{-180}{30}$$



$$\sin(-210^\circ) = \frac{1}{2}$$

$$\tan\left(\frac{5\pi}{3}\right) \frac{180}{\pi} = 300$$

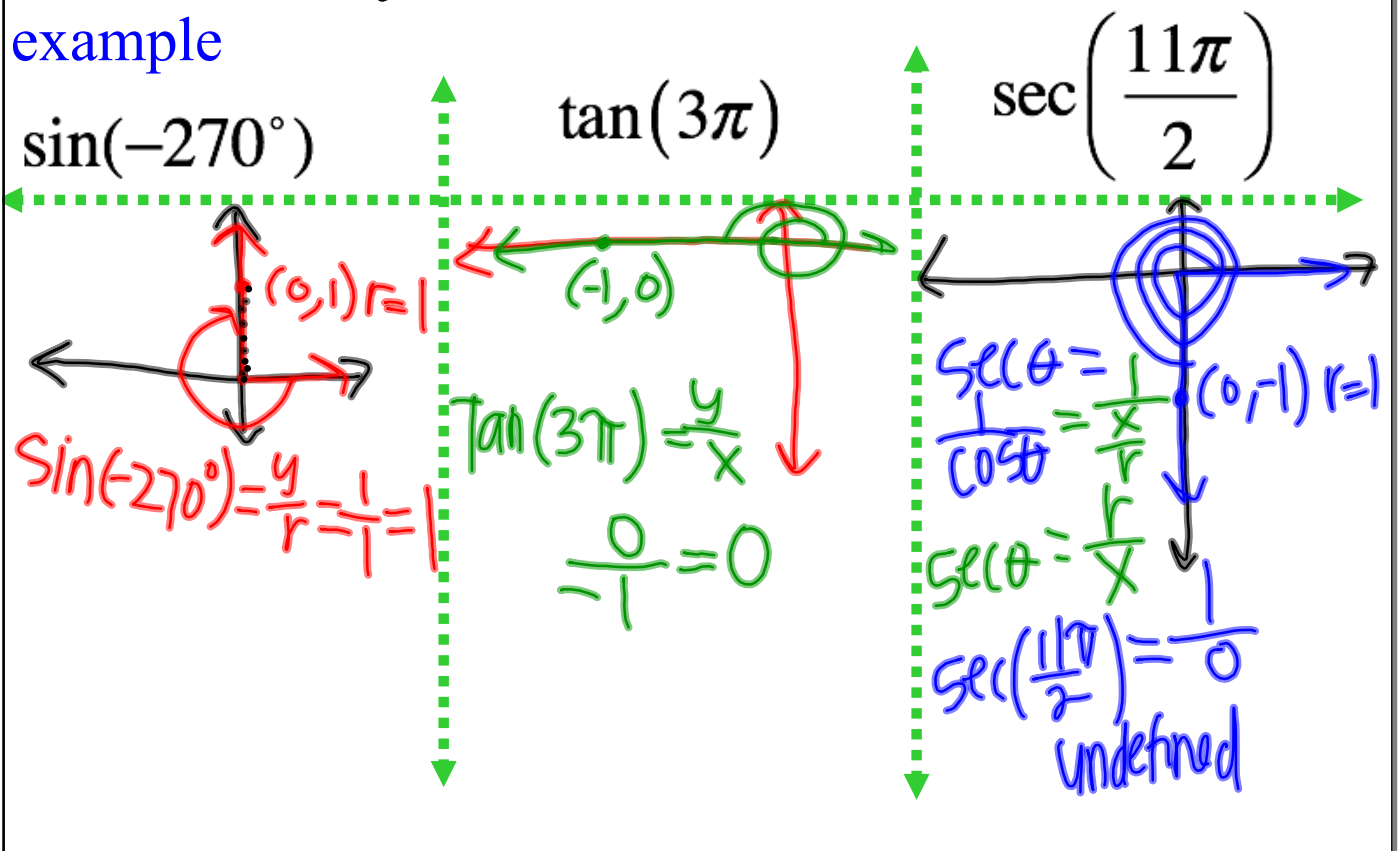


$$\tan\left(\frac{5\pi}{3}\right) = \frac{-1}{\sqrt{3}}$$

$$\sec\left(\frac{-3\pi}{4}\right)$$

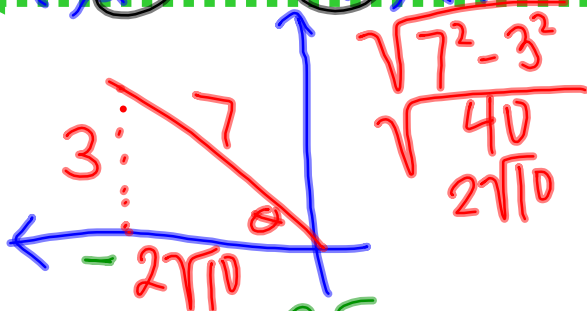
quadrantal angles: angles with the terminal ray on one of the axes

example



Find $\cos \theta$ and $\tan \theta$ by using the given information to construct a reference triangle

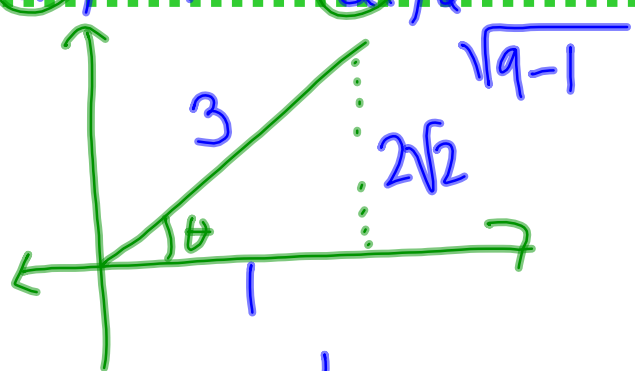
$\sin \theta = \frac{3}{7}$ (Q1, Q2) $\tan \theta < 0$ (Q2, Q4)



$$\cos \theta = \frac{-2\sqrt{10}}{7}$$

$$\tan \theta = \frac{3}{-2\sqrt{10}}$$

$\sec \theta = 3$ (Q1, Q4) $\sin \theta > 0$ (Q1, Q2)



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

$$\tan \theta = \frac{2\sqrt{2}}{1}$$