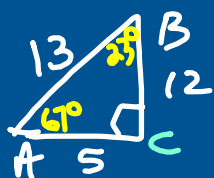


BASIC TRIG FACTS

Cofunctions - Complementary functions



$$\begin{aligned} \sin 67^\circ &= \frac{12}{13} & \sin 23^\circ &= \frac{5}{13} \\ \cos 67^\circ &= \frac{5}{13} & \cos 23^\circ &= \frac{12}{13} \end{aligned}$$

$$\begin{aligned} \sin A &= \cos(90^\circ - A) \\ \sec A &= \csc(90^\circ - A) \\ \tan A &= \cot(90^\circ - A) \end{aligned}$$

Write in terms of its compl. func:

$$\csc 70^\circ = \sec 20^\circ$$

$$\tan 53^\circ 10' = \cot 36^\circ 50' \quad \begin{array}{r} 89^\circ 60' \\ - 53^\circ 10' \\ \hline 36^\circ 50' \end{array}$$

$$\cos \frac{\pi}{6} = \sin \frac{\pi}{3}$$

$$\frac{\pi}{2} - \frac{\pi}{6}$$

$$\frac{3\pi}{6} - \frac{\pi}{6} = \frac{2\pi}{6} = \frac{\pi}{3}$$

Star
 $+$ $\left[\frac{\sin \theta}{\csc \theta} \right]$
 $+$ $\left[\frac{\tan \theta}{\cot \theta} \right]$
Trig
III

All I
All $+$
 $\left[\frac{\cos \theta}{\sec \theta} \right]$ $+$
Class
IV

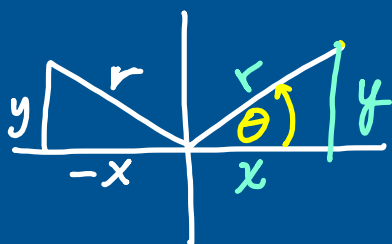
Find quadrant.

$\csc \theta > 0$ $\tan \theta \leq 0$
 $+$ $-$
II

	X
X	X

$\sec \theta < 0$ $\sin \theta < 0$
 $-$ $-$
III

X	X
	X



$$\sin \theta = \frac{\text{Your}}{\text{rotten}}$$

$$\cos \theta = \frac{\text{Xylophone}}{\text{right}}$$

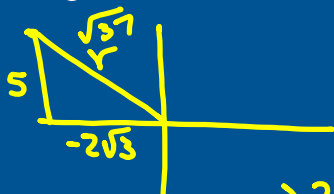
$$\tan \theta = \frac{\text{Your}}{\text{through}}$$

$$\csc \theta = \frac{r}{y}$$

$$\sec \theta = \frac{r}{x}$$

$$\cot \theta = \frac{x}{y}$$

Terminal side of angle θ passes through $(-2\sqrt{3}, 5)$. What is $\sec \theta$.



$$(5)^2 + (-2\sqrt{3})^2 = r^2$$

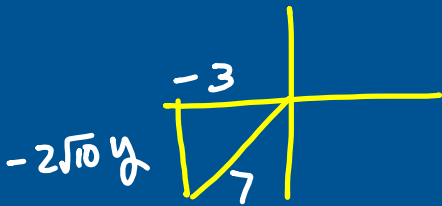
$$25 + 12 = r^2$$

$$\pm \sqrt{37} = \sqrt{r^2}$$

$$\sec \theta = \frac{r}{x} = \frac{\sqrt{37} \cdot \sqrt{3}}{-2\sqrt{3} \cdot \sqrt{3}}$$

$$= \frac{\sqrt{111}}{-6}$$

If $\cos \theta = \frac{-3}{r}$ and $\theta > 0$,
find $\csc \theta$.



$$\csc \theta = \frac{r}{y} = \frac{7}{-2\sqrt{10}} = \frac{7\sqrt{10}}{-20}$$

$$\begin{aligned} y^2 + 9 &= 49 \\ \sqrt{y^2} &= \sqrt{40} \\ y &= \pm 2\sqrt{10} \end{aligned}$$

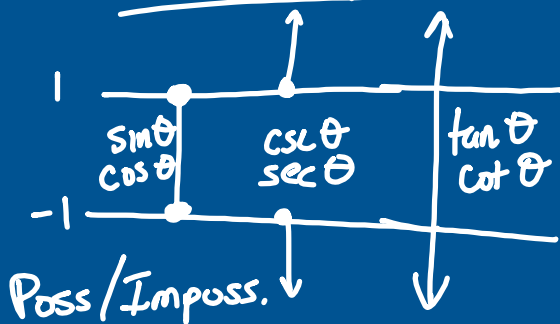
Negative angles

$$\begin{aligned} \sin(-\theta) &= -\sin\theta & \csc(-\theta) &= -\csc\theta \\ \cos(-\theta) &= \cos\theta & \sec(-\theta) &= \sec\theta \\ \tan(-\theta) &= -\tan\theta & \cot(-\theta) &= -\cot\theta \end{aligned}$$

$$\begin{aligned} \sin(-\theta) &= \frac{2}{3} \\ \csc(-\theta) &= \frac{3}{2} \\ \sin(\theta) &= -\frac{2}{3} \end{aligned}$$

$$\begin{aligned} \sec(\theta) &= \frac{2}{13} \\ \cos(-\theta) &= \frac{13}{2} \end{aligned}$$

Possible/Impossible Values.



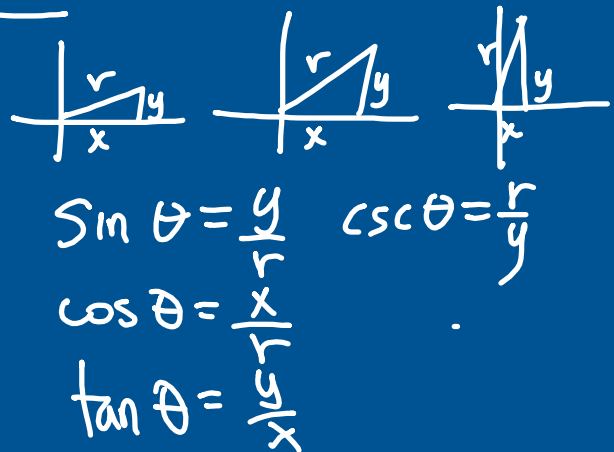
Poss/Imposs.

$$2 \sec \gamma + 3 = 7$$

$$2 \sec \gamma = 4$$

$$\sec \gamma = 2 \quad \text{Possible}$$

$$\tan \theta = +\frac{7}{3} + \cot \theta = -\frac{3}{7} \quad \text{Impossible}$$



$$\sin \theta = \frac{y}{r}$$

$$\csc \theta = \frac{r}{y}$$

$$\cos \theta = \frac{x}{r}$$

$$\tan \theta = \frac{y}{x}$$