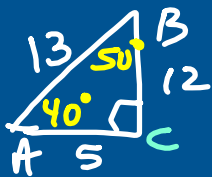


BASIC TRIG FACTS

Cofunctions - Complementary functions



$$\sin A = \frac{12}{13} \quad \sin B = \frac{5}{13}$$

$$\cos A = \frac{5}{13} \quad \cos B = \frac{12}{13}$$

$$\sin A = \cos(90^\circ - A)$$

$$\sec A = \csc(90^\circ - A)$$

$$\tan A = \cot(90^\circ - A)$$

Write in terms of its compl. func:

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

$$\tan 53^\circ 10' = \cot 36^\circ 50'$$

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

$$\frac{\pi}{2} - \frac{\pi}{6} = \frac{3}{6} - \frac{1}{6} = \frac{2}{6} = \frac{1}{3}\pi$$

Reciprocal

$$\sin \theta = \frac{o}{h} \quad \csc \theta = \frac{h}{o}$$

$$\cos \theta = \frac{a}{h} \quad \sec \theta = \frac{h}{a}$$

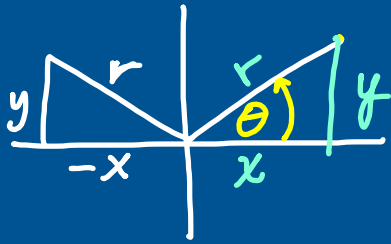
$$\tan \theta = \frac{o}{a} \quad \cot \theta = \frac{a}{o}$$

II Star $+$ $\left[\begin{array}{l} \sin \theta \\ \csc \theta \end{array} \right]$ $+$ $\left[\begin{array}{l} \tan \theta \\ \cot \theta \end{array} \right]$ Trig III	All I All + $\left[\begin{array}{l} \cos \theta \\ \sec \theta \end{array} \right] +$ Class IV
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Find quadrant.

II $\csc \theta > 0$ $\tan \theta < 0$
 $\quad \quad \quad + \quad \quad \quad -$
 III $\sec \theta < 0$ $\sin \theta < 0$





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

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

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

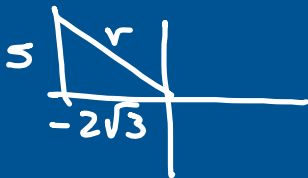
$$\csc \theta = \frac{r}{y}$$

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

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

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

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



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

$$25 + 12 = r^2$$

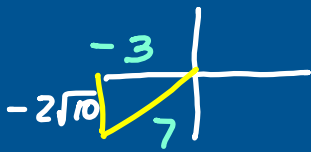
$$\sqrt{37} = \sqrt{r^2}$$

$$\sqrt{37} = r$$

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

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

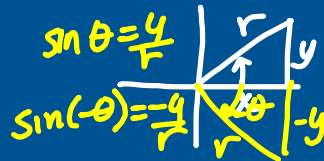
If $\cos \theta = \frac{-3}{7} + \frac{y}{r}$ and $\theta > 0$,
find $\sin \theta$.



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

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

Negative angles

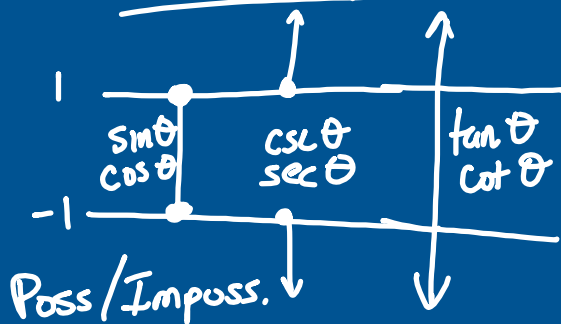


$$\begin{aligned} \sin(-\theta) &= -\sin \theta & \csc(-\theta) &= -\csc \theta \\ \cos(-\theta) &= \cos \theta & \sec(-\theta) &= \sec \theta \\ \tan(-\theta) &= -\tan \theta & \cot(-\theta) &= -\cot \theta \end{aligned}$$

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

$$\begin{aligned} \sec(\theta) &= \frac{21}{13} \\ \cos(-\theta) &= \frac{13}{21} \end{aligned}$$

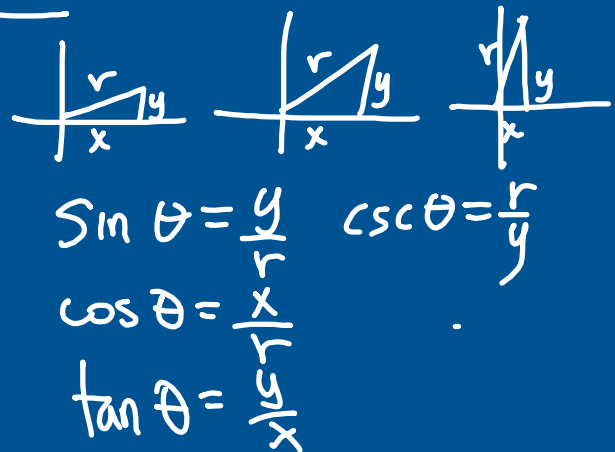
Possible/Impossible Values.



$$2 \sec \gamma + \frac{3}{-3} = \frac{7}{-3}$$

$$2 \sec \gamma = \frac{4}{3}$$

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



$$\tan \theta = \frac{7}{3} + \cot \theta = \frac{3}{7}$$

Impossible

