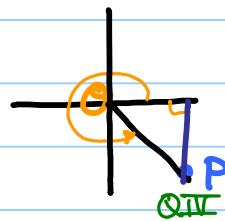
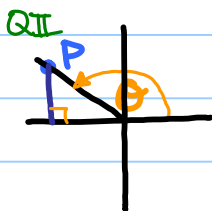
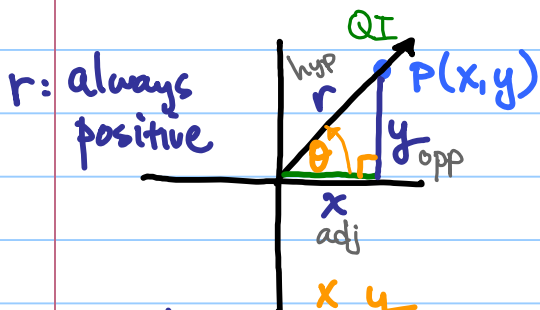


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TUE

4.4 (part 1) Trig Functions of any angle

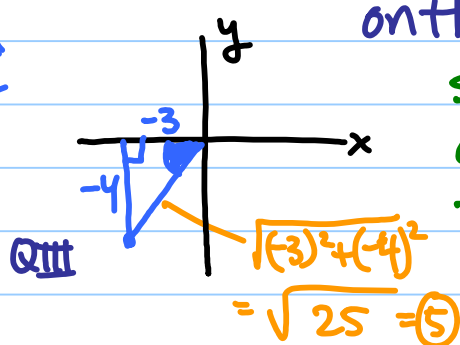
SOH CAH TOA

S | A
T | C



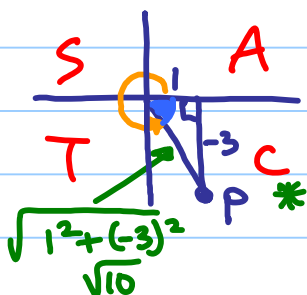
ex) $P(-3, -4)$. Find the six trig ratios given P is on the terminal side.

S | A
T | C



$$\begin{aligned} \sin \theta &= \frac{-4}{5} & \csc \theta &= \frac{-5}{4} \\ \cos \theta &= \frac{-3}{5} & \sec \theta &= \frac{-5}{3} \\ \tan \theta &= \frac{4}{3} & \cot \theta &= \frac{3}{4} \end{aligned}$$

ex) $P(1, -3)$ six trig ratios



$$\begin{aligned} \sin \theta &= \frac{-3}{\sqrt{10}} \rightarrow \frac{-3\sqrt{10}}{10} & \csc \theta &= \frac{\sqrt{10}}{-3} \\ \cos \theta &= \frac{1}{\sqrt{10}} \rightarrow \frac{\sqrt{10}}{10} & \sec \theta &= \frac{\sqrt{10}}{1} \\ \tan \theta &= \frac{-3}{1} & \cot \theta &= \frac{1}{-3} \end{aligned}$$

ex) S | A
T | C

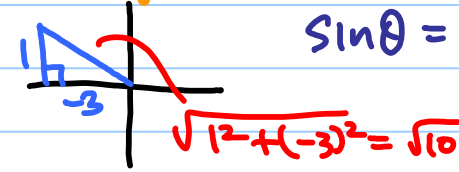
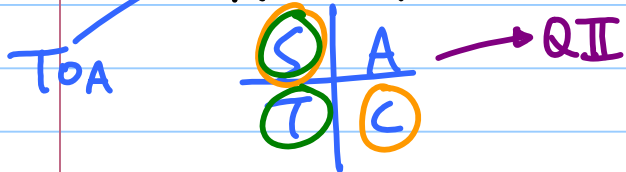
Quads where the trig ratios are positive

$\rightarrow \sin \theta > 0$ & $\cos \theta > 0$? \rightarrow Quadrant I
Q I & Q II Q I & Q IV

$\rightarrow \sin \theta < 0$ & $\cos \theta < 0$? \rightarrow Quadrant III
Q III & Q IV Q II & Q III

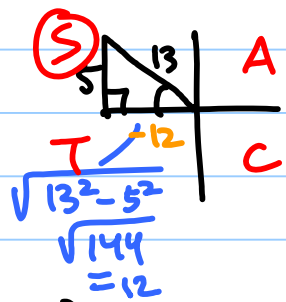
Given: ratio & clue

ex) $\tan \theta = -\frac{1}{3}$ & $\cos \theta < 0$. \leftarrow Clues
Find $\sin \theta$.



$$\sin \theta = \frac{1 \cdot \sqrt{10}}{\sqrt{10} \cdot \sqrt{10}} \rightarrow \frac{\sqrt{10}}{10}$$

ex) $\sin \theta = \frac{5}{13}$, QII. Find all 6 trig functions



$$\cos \theta = \frac{-12}{13}$$

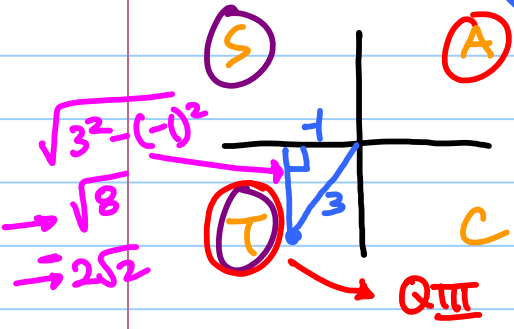
$$\tan \theta = \frac{-5}{12}$$

$$\csc \theta = \frac{13}{5}$$

$$\sec \theta = \frac{-13}{12}$$

$$\cot \theta = \frac{-12}{5}$$

ex) $\sec \theta = -3$, $\tan \theta > 0$. Find all 6 trig functions.



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

CAH
neg

$$\sin \theta = \frac{-2\sqrt{2}}{5}$$

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

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

$$\csc \theta = \frac{-5}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} \rightarrow \frac{-3\sqrt{2}}{4}$$

$$\sec \theta = \frac{-3}{1}$$

$$\cot \theta = \frac{1}{2\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} \rightarrow \frac{\sqrt{2}}{4}$$

HW. p513 # 2-34 even