

Triangles in Quadrants

signs

II sine + cos - tan -	I sine + cos + tan +
III sine - cos - tan +	IV sine - cos + tan -

cosine \rightarrow x

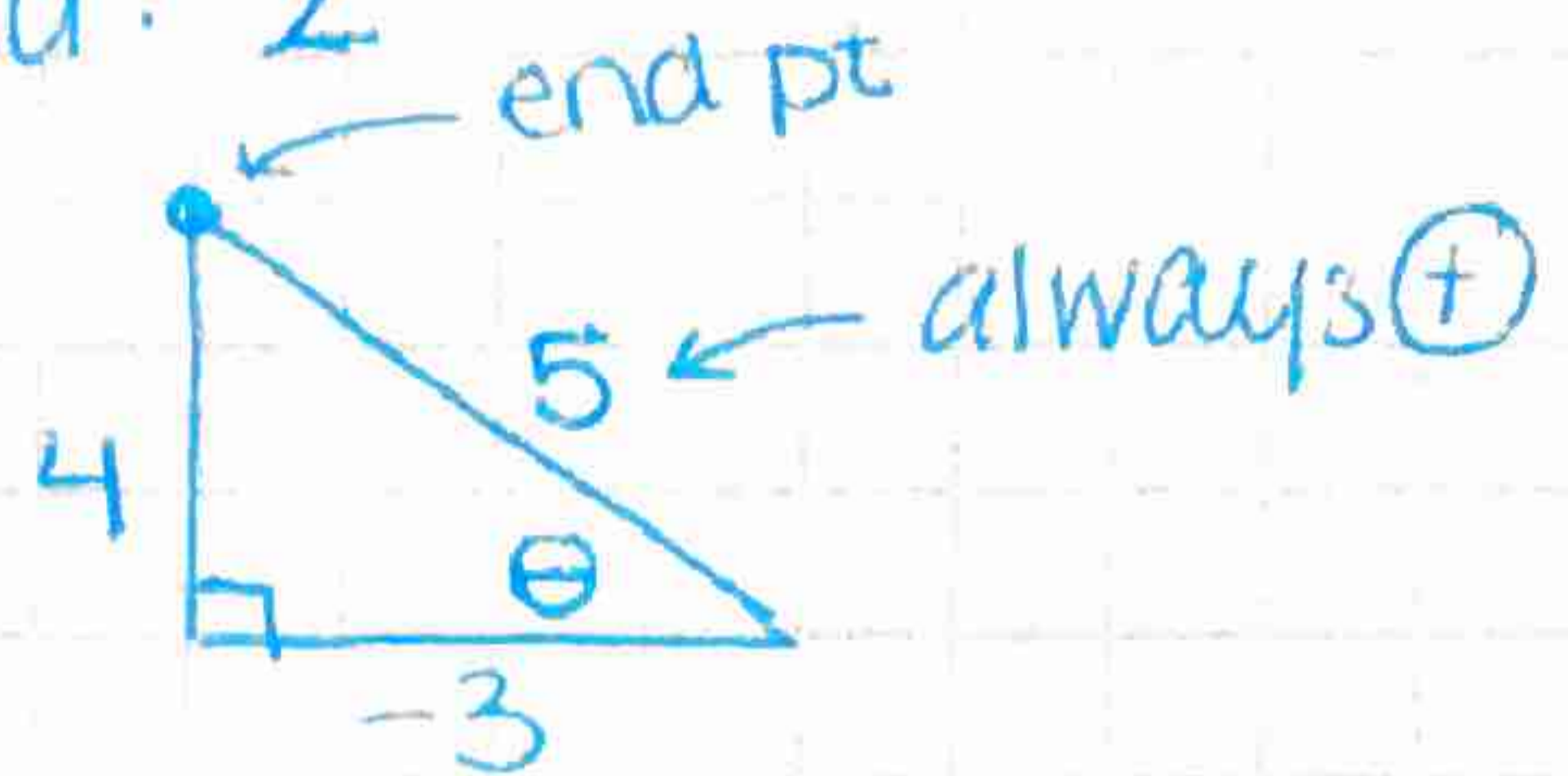
sine \rightarrow y

tan \rightarrow ~~op~~ sin/cos

ex1 Let $(-3, 4)$ be the end pt of the terminal side, find θ trig functions

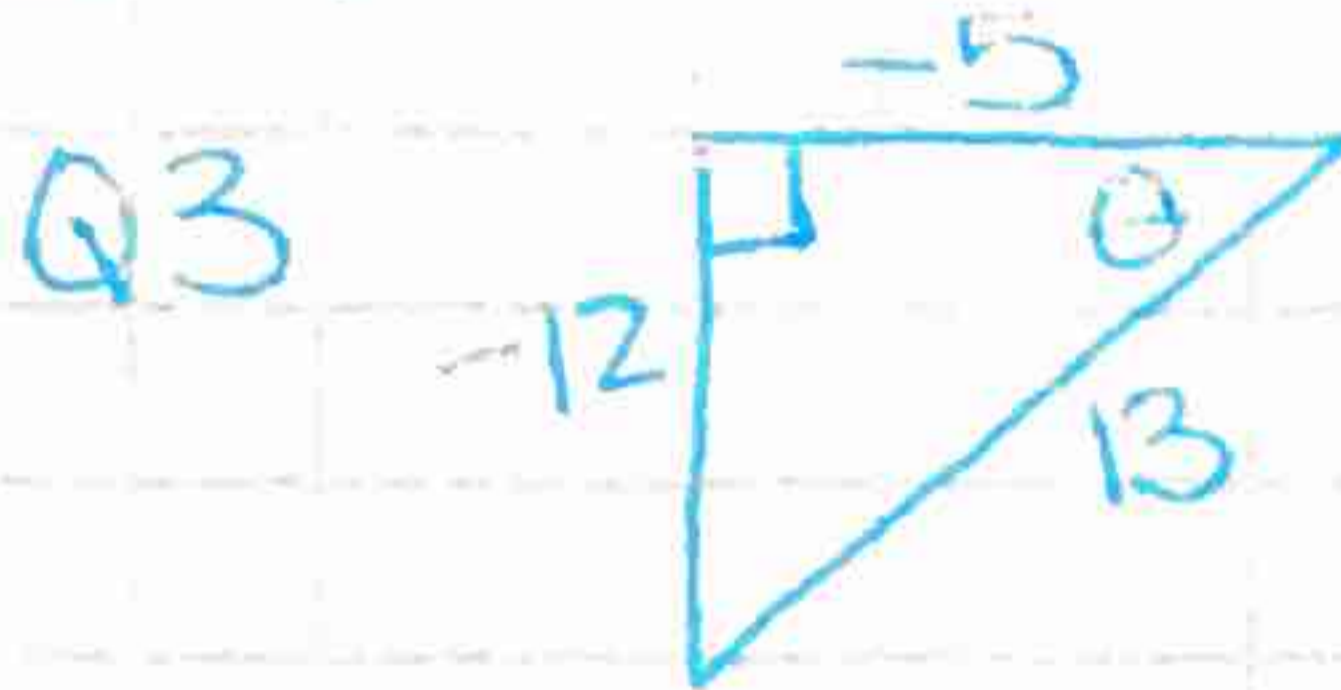
① which quad? 2

② picture



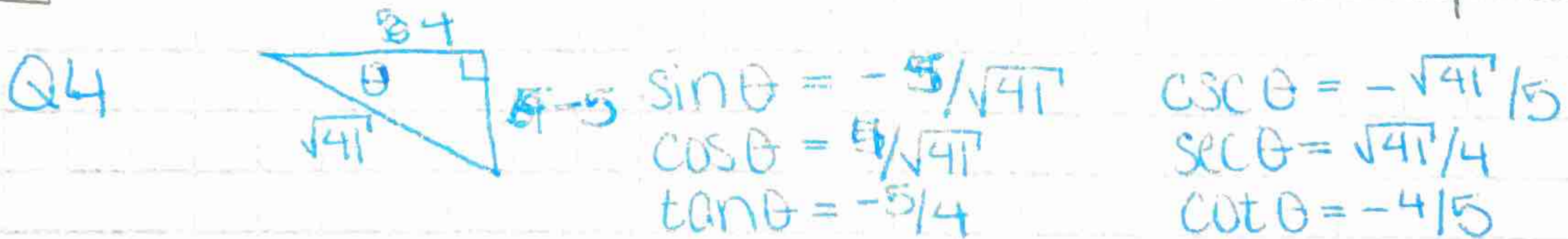
$$\begin{aligned} \sin \theta &= 4/5 & \csc \theta &= 5/4 \\ \cos \theta &= -3/5 & \sec \theta &= -5/3 \\ \tan \theta &= 4/-3 & \cot \theta &= -3/4 \end{aligned}$$

ex2 $(-5, -12)$ is the end pt



$$\begin{aligned} \sin \theta &= -12/13 & \csc \theta &= -13/12 \\ \cos \theta &= -5/13 & \sec \theta &= -13/5 \\ \tan \theta &= 12/5 & \cot \theta &= 5/12 \end{aligned}$$

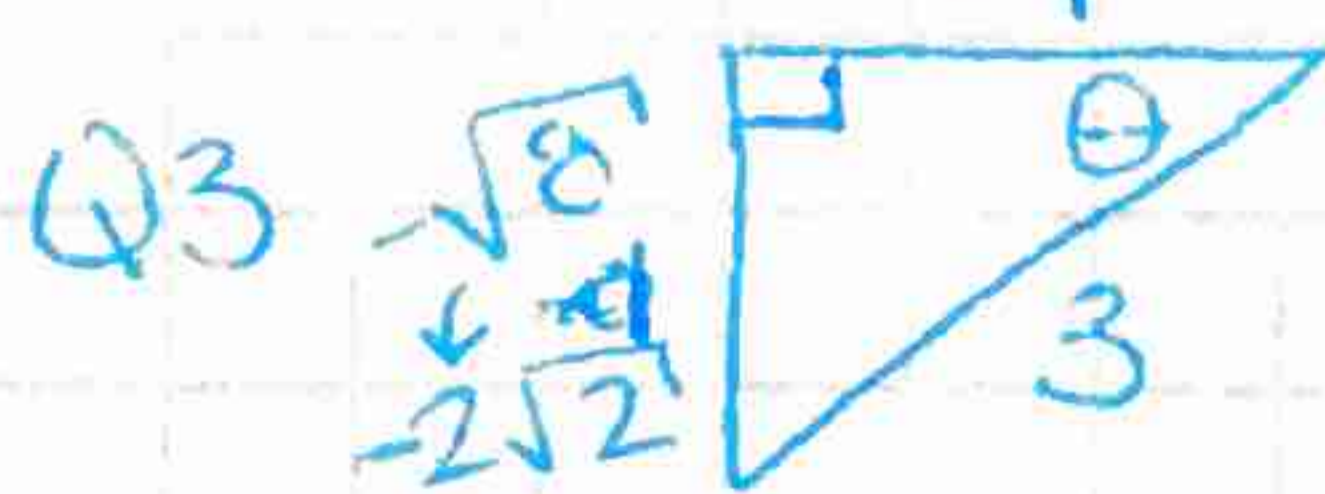
ex3 Given $\tan \theta = -5/4$ & $\cos \theta > 0$, find θ trig functions



$$\begin{aligned} \sin \theta &= -5/\sqrt{41} & \csc \theta &= -\sqrt{41}/5 \\ \cos \theta &= 4/\sqrt{41} & \sec \theta &= \sqrt{41}/4 \\ \tan \theta &= -5/4 & \cot \theta &= -4/5 \end{aligned}$$

ex4 Given $\sec \theta = -3$ & $\csc \theta < 0$, find θ trig functions

sec \rightarrow cos \rightarrow (+)
csc \rightarrow sin \rightarrow (-)



$$\begin{aligned} \sin \theta &= -2\sqrt{2}/3 & \csc \theta &= -3/2\sqrt{2} \\ \cos \theta &= -1/3 & \sec \theta &= -3 \\ \tan \theta &= 2\sqrt{2} & \cot \theta &= 1/2\sqrt{2} \end{aligned}$$