

Two Clues Kwiz!

Due Tuesday 2/21/2017

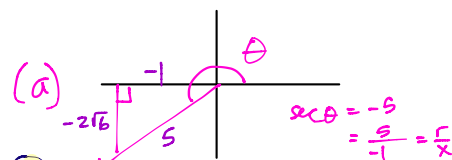
On a separate piece of paper, complete a-e for each of the following. Show all work. Avoid intermediate rounding error. Box your final answers, with units when appropriate.



1. If $\sec \theta = -5$ and $\csc \theta < 0$
2. If $\cot \theta = -\frac{3}{4}$ and $\sec \theta < 0$
3. If $\csc \theta = -3$ and $\sec \theta < 0$
4. If $\cos \theta = \frac{2}{7}$ and $\csc \theta < 0$

- (a) Draw the reference triangle for θ in the correct quadrant. Show your arc and angle θ .
- (b) Find the **simplified, exact, rationalized** value of $\sin \theta$.
- (c) Find the **simplified, exact, rationalized** value of $\tan \theta$.
- (d) Find the reference angle, θ_{ref} , for θ in degrees. **Show the equation you are solving** and report 3 decimals.
- (e) To three decimals, find the value of θ such that $\theta \in [0^\circ, 360^\circ)$. Show the computations that lead to your answer.

① $\sec \theta = -5, \csc \theta < 0$



$y = -\sqrt{5^2 - (-1)^2}$
 $= -\sqrt{24}$
 $= -2\sqrt{6}$ (✓2)

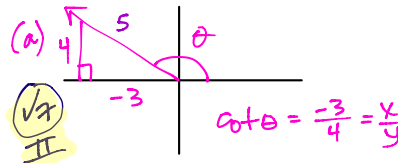
(b) $\sin \theta = \frac{-2\sqrt{6}}{5}$ (✓3)

(c) $\tan \theta = \frac{-2\sqrt{6}}{-1} = 2\sqrt{6}$ (✓4)

(d) $\theta = \tan^{-1}(2\sqrt{6})$
 $\theta = 78.463^\circ$
 $\theta_{ref} = 78.463^\circ$ (✓5)

(e) $\theta = 180^\circ + \theta_{ref}$
 $\theta = 258.463^\circ$ (✓6)

② $\cot \theta = -\frac{3}{4}, \sec \theta < 0$



$\cot \theta = \frac{-3}{4} = \frac{x}{y}$
 $r = \sqrt{4^2 + (-3)^2}$
 $r = \sqrt{25}$
 $r = 5$ (✓8)

(b) $\sin \theta = \frac{4}{5}$ (✓9)

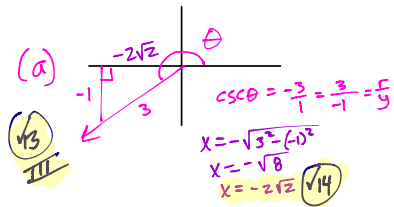
(c) $\tan \theta = -\frac{4}{3}$ (✓10)

(d) $\theta = \sin^{-1}(\frac{4}{5})$
 $\theta = 53.130^\circ$
 $\theta_{ref} = 53.130^\circ$ (✓11)

(e) $\theta = 180^\circ - \theta_{ref}$
 $\theta = 126.870^\circ$ (✓12)
 $\theta = 126.869^\circ$

24 checks, 4pts each

③ $\csc \theta = -3, \sec \theta < 0$



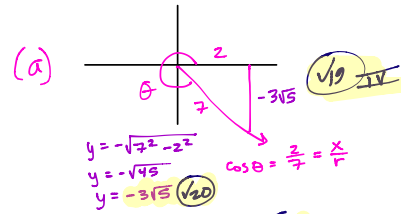
(b) $\sin \theta = -\frac{1}{3}$ ($\sqrt{19}$)

(c) $\tan \theta = \frac{-1}{-2\sqrt{2}} = \frac{1}{2\sqrt{2}} \left(\frac{\sqrt{2}}{\sqrt{2}} \right) = \frac{\sqrt{2}}{4}$ ($\sqrt{10}$)

(d) $\theta = \sin^{-1}\left(-\frac{1}{3}\right)$
 $\theta = -19.4712^\circ$
 $\theta_{\text{ref}} = 19.471^\circ$ ($\sqrt{17}$)

(e) $\theta = 180^\circ + \theta_{\text{ref}}$
 $\theta = 199.471^\circ$ ($\sqrt{18}$)

④ $\cos \theta = \frac{2}{7}, \csc \theta < 0$



(b) $\sin \theta = -\frac{3\sqrt{5}}{7}$ ($\sqrt{21}$)

(c) $\tan \theta = -\frac{3\sqrt{5}}{2}$ ($\sqrt{22}$)

(d) $\theta = \tan^{-1}\left(-\frac{3\sqrt{5}}{2}\right)$
 $\theta = -73.398^\circ$
 $\theta_{\text{ref}} = 73.398^\circ$ ($\sqrt{23}$)

(e) $\theta = 360^\circ - \theta_{\text{ref}}$
 $\theta = 286.602^\circ$ ($\sqrt{24}$)
 OR $\theta = 286.601^\circ$