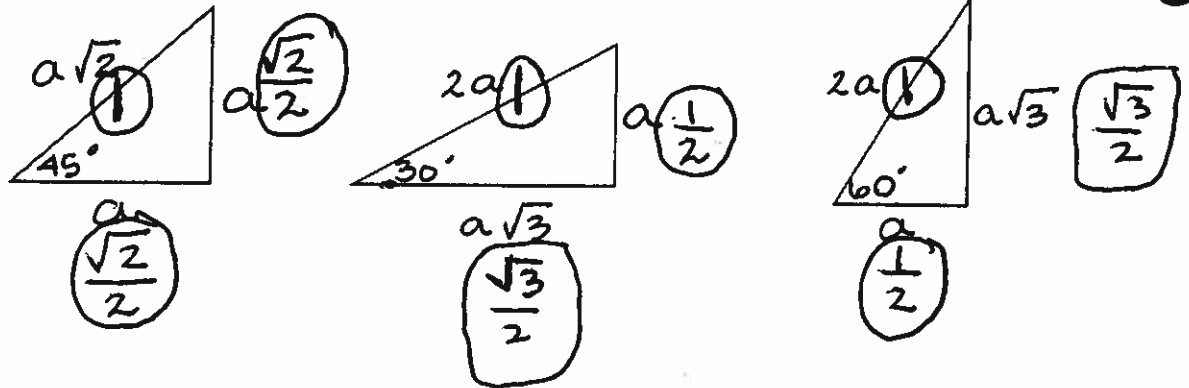
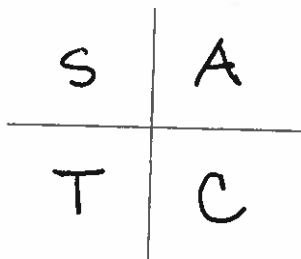


Special Right Triangles



Quadrants With Positive Trig Ratios

Trig Ratios



$$\sin = \frac{\text{opp}}{\text{hyp}}$$

or $\frac{y}{r}$

$$\cos = \frac{\text{adj}}{\text{hyp}}$$

or $\frac{x}{r}$

$$\tan = \frac{\text{opp}}{\text{adj}}$$

or $\frac{y}{x}$

Degrees to Radians

$$180^\circ = \pi \text{ radians}$$

$$1^\circ = \text{radians}$$

Radians to Degrees

$$\pi \text{ radians} = 180^\circ$$

$$1 \text{ radian} = \text{ }^\circ$$

Unit 8 Notes for Objective 3

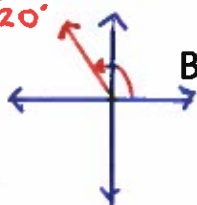
Coterminal angles: Add or Subtract a full rotation (360°) and you'll end up in the same place you started.

Task #1: Find one positive and one negative coterminal angle for the given angle Θ :

A. $\Theta = 120^\circ$

$$120 + 360 = 480^\circ$$

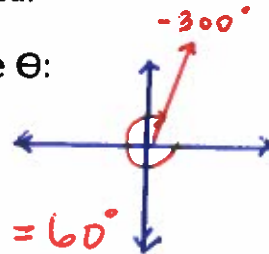
$$120 - 360 = -240^\circ$$



B. $\Theta = -300^\circ$

$$-300 + 360 = 60^\circ$$

$$-300 - 360 = -660^\circ$$



Task #2: Sketch the given angle in standard position, identify the quadrant for the terminating ray, identify the reference angle, find $\sin\Theta$, $\cos\Theta$, and $\tan\Theta$. This sounds like a lot of things but it's really just one problem that has many moving parts.

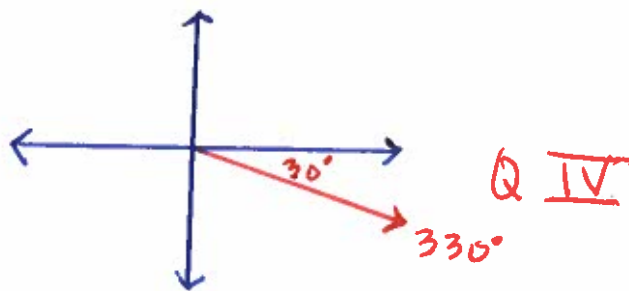
A. $\Theta = 330^\circ$

Reference angle: 30°

$$\sin\Theta = -\frac{1}{2}$$

$$\cos\Theta = \frac{\sqrt{3}}{2}$$

$$\tan\Theta = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}} = \frac{1}{\sqrt{3}} = -\frac{\sqrt{3}}{3}$$



B. $\theta = -225^\circ$

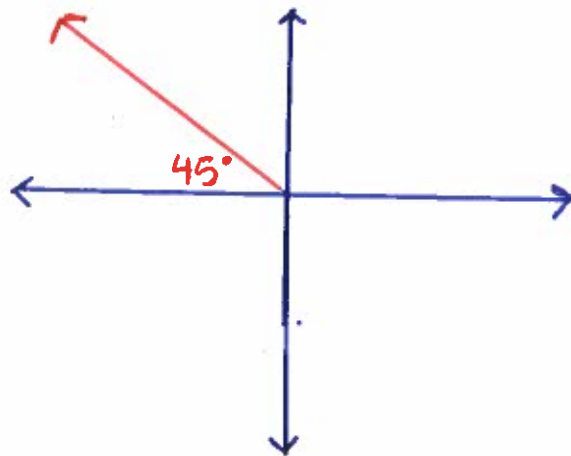
Q II

Reference angle: 45°

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

$$\cos \theta = -\frac{\sqrt{2}}{2}$$

$$\tan \theta = -1$$



Task #3 – What happens when the angle falls on an axis? It's called a "quadrantal".

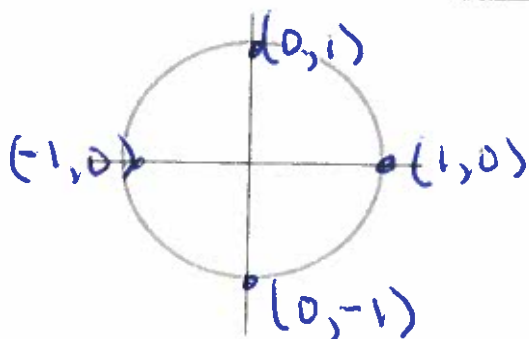
In the unit circle, the radius is always 1

SohCahToa doesn't work!

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

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

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



Sketch the angle in standard position, find $\sin \theta$, $\cos \theta$, and $\tan \theta$.

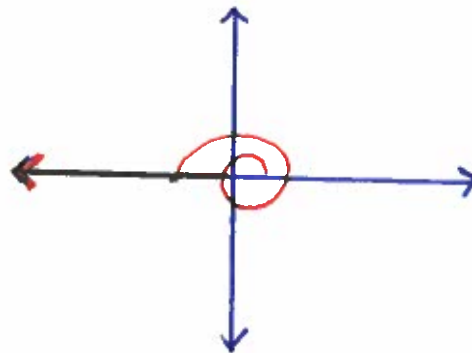
A. $\theta = 540^\circ$

Reference angle: ~~45~~ *Quadrantal*

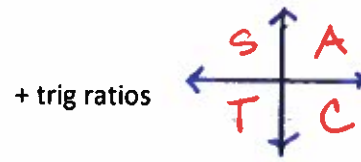
$$\sin \theta = \frac{0}{1} = 0$$

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

$$\tan \theta = \frac{0}{-1} = 0$$



Task #4: Identify all of the quadrants where the terminating ray for θ would make the equation true.



A. $\tan \theta = \frac{8}{5}$

(+)

I

III

B. $\sin \theta = \pm \frac{7}{11}$

All 4

Quadrants

C. $\cos^2 \theta = \frac{2}{9}$

All 4

Quadrants

D. $\cos \theta = -\frac{5}{14}$

(-)

II

III