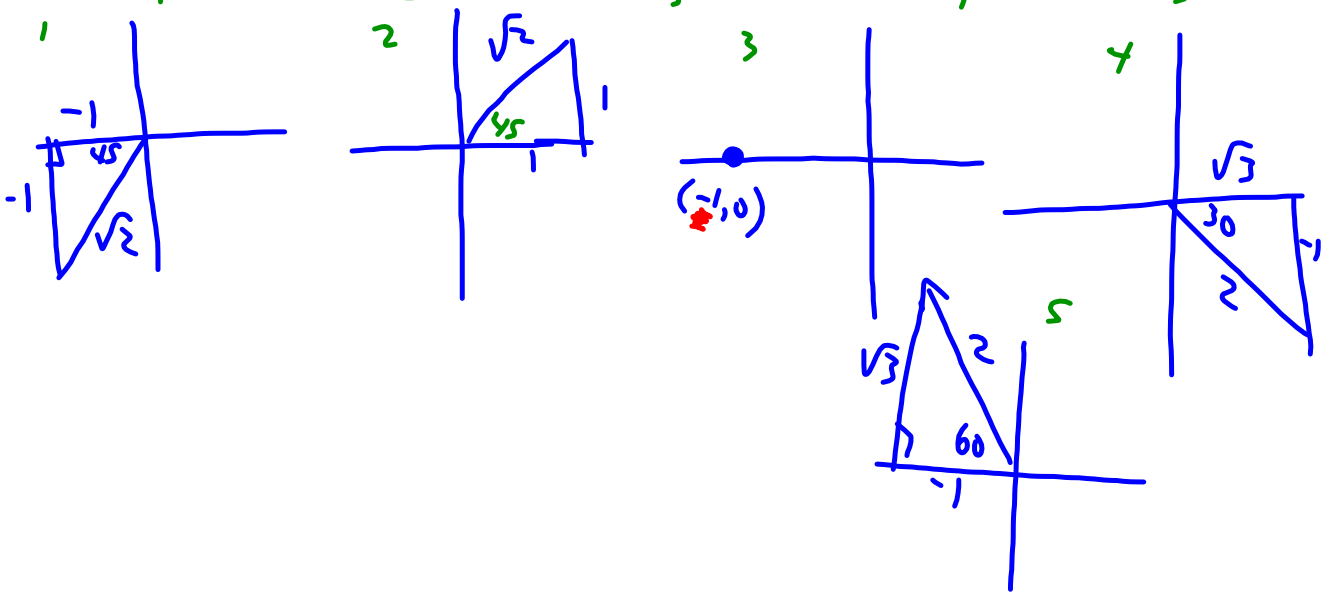
Warm Up

Evaluate the following without using the trigonometric functions on a calculator:

$$3\csc(2745^\circ)\cos(-2115^\circ)-5\sec(1620^\circ)+7\sin(-2190^\circ)\cot^2(840^\circ)$$

225 (1) 45 (2) 180 (3) 330 (4) 120 (5)



$$= 3(-\sqrt{2})\left(\frac{1}{\sqrt{2}}\right) - 5(-1) + 7\left(\frac{-1}{2}\right)\left(\frac{-1}{\sqrt{3}}\right)^2$$

$$= -3 + 5 + \frac{-7}{2}\left(\frac{1}{3}\right)$$

$$= \frac{2}{1} - \frac{7}{6}$$

$$= \frac{12}{6} - \frac{7}{6}$$

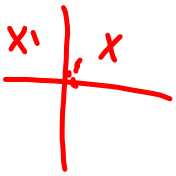
$$= \frac{5}{6}$$

Finding Angles Using a Calculator

***** Must be in DEGREE mode *****

$\sin\theta \overset{+}{=} 0.7660$

$\theta =$ 50°



$\cos\theta = -0.8291$

$\theta =$ 146°

x' or $\frac{1}{x}$

$\cot\theta = 2.1445$

$\theta =$ 25°

$\csc\theta = -1.0642$

$\theta =$ -70°

Finding multiple angles for any given trigonometric ratio...

#1. $\cos\theta = -0.5736$, $0^\circ \le \theta \le 360^\circ$

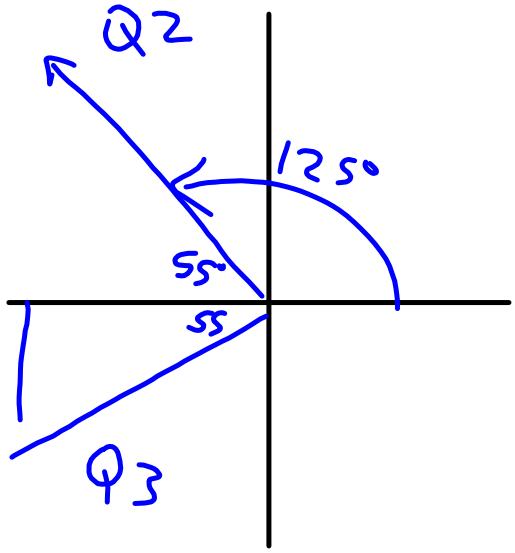
(Ref ∠ 55°, Q2,3)

Do not include Negative in calculator

Must be in Quadrant I

θ = 125 (Q2)

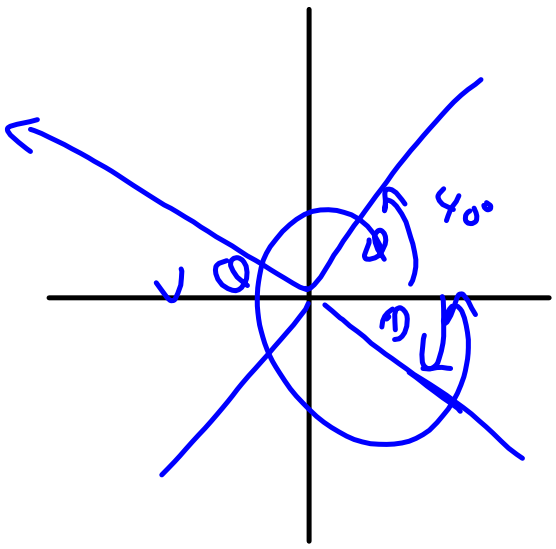
θ = 235° (Q3)

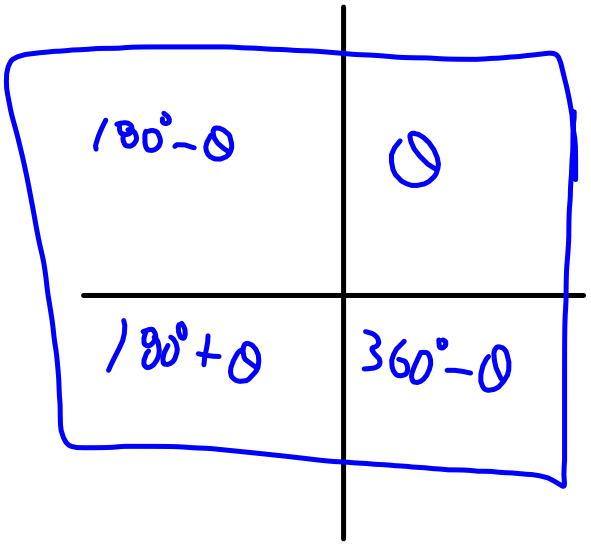


(Ref ∠ 55, Q2,3)

θ = 125°, 235°

How can equivalent reference angles be created in any quadrant?



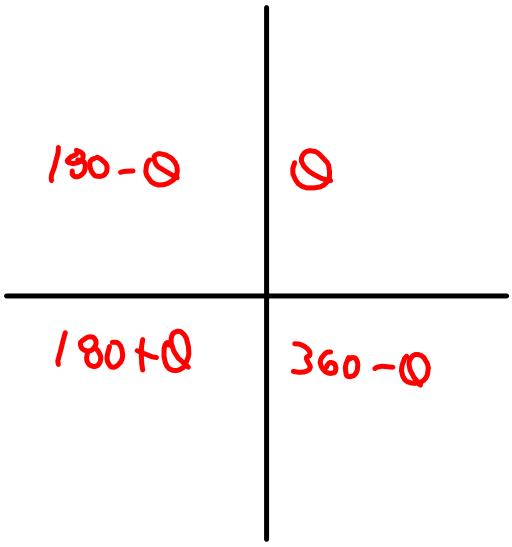


"y" → Negative

#2. $\sin\theta = -0.3420$, $0^o \leq \theta \leq 360^o$

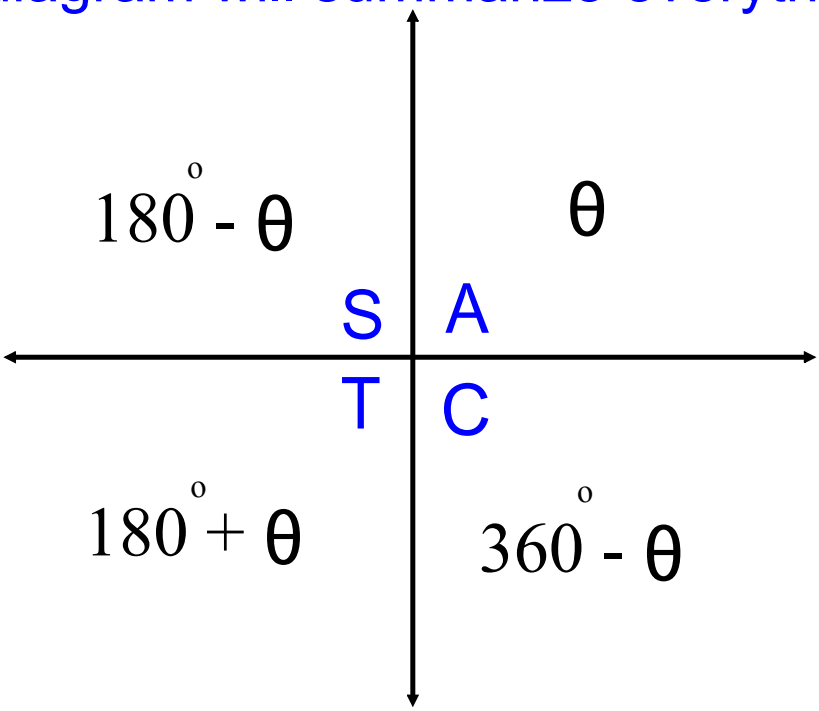
(Ref ∠ 20°, Q 3, 4)

$\theta = 200°, 340°$



Determining multiple angles from a given trigonometric ratio...

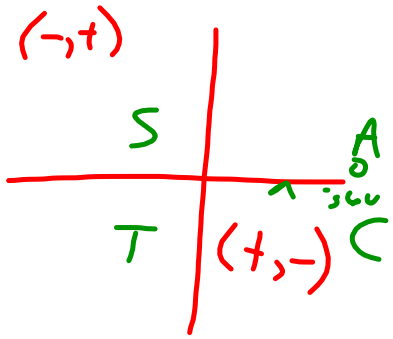
This diagram will summarize everything...



#3. $\cot\theta = -1.1918$, $0^o \le \theta \le 360^o$

(Ref ∠: 45, Q2, 4)

$\theta = 140^\circ, 320^\circ$



#4. $\cos\theta = 0.9659$, $0^o \le \theta \le 360^o$

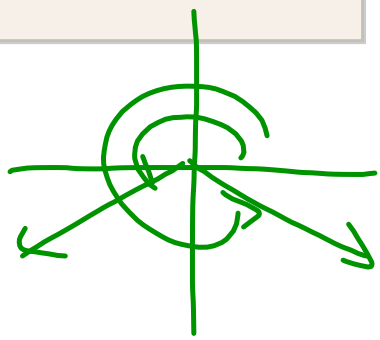
(Ref ∠: 15, Q1, 4)

$\theta = 15^\circ, 345^\circ$

Try This One!!!

Given that $\csc\theta = -1.3054$ (sin), find all possible values of θ given the domain $0 \le \theta \le 720°$

(Ref ∠ 50°, Q 3, 4)



$\theta = 230°, 310°$

$+360°, +360°$

$= 590°, 670°$

Check Up

Determine all possible angles that satisfy the conditions below:

1. $\sin x = -0.4695 \ , 0° \leq x \leq 360°$

(Ref ∠ 28°, Q 3, 4)

$\theta = 208°, 332°$

2. $\sec x = 1.1223 \ , 270° \leq x \leq 360°$

(Ref ∠ 27°, Q 4)

$\theta = 333°$