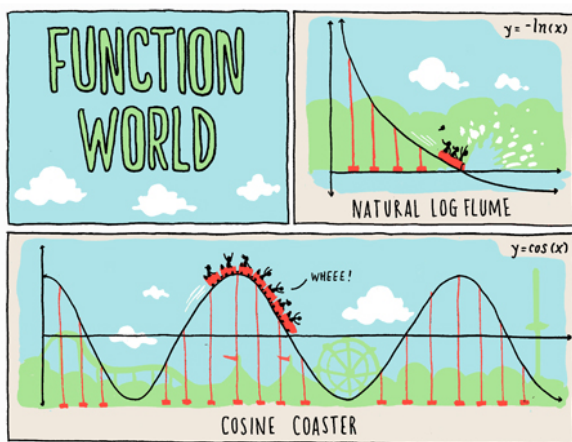


- <https://www.desmos.com/calculator/ie7t023ltt>
- <https://www.desmos.com/calculator/4fyo8vvevx>

Pick up the Warm Up



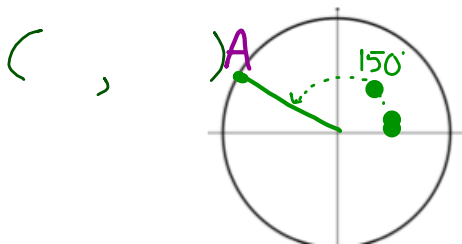
HW
help \Rightarrow
😊

1. Summarize from Yesterday Complete the following....

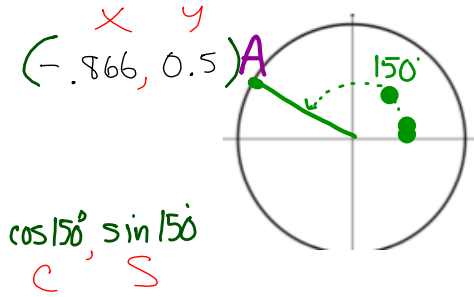
On a Unit Circle, the *sine* value tells you the vertical distance from the x-axis.

The *cosine* value tells you the horizontal distance from the y-axis

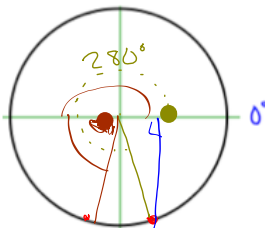
2. Find the coordinates of Point A on the Unit Circle if the angle of rotation your answer to 3 decimal places.



2. Find the coordinates of Point A on the Unit Circle if the angle of rotation your answer to 3 decimal places.



3. Name another rotation angle with the same sine value as 280° .



$$\sin(280^\circ) = \sin(260^\circ)$$

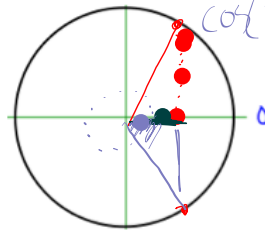
$$180^\circ + 80$$

$$\boxed{260^\circ}$$

$$\theta = 260$$

$$\begin{array}{r} 360 \\ -280 \\ \hline 80^\circ \end{array}$$

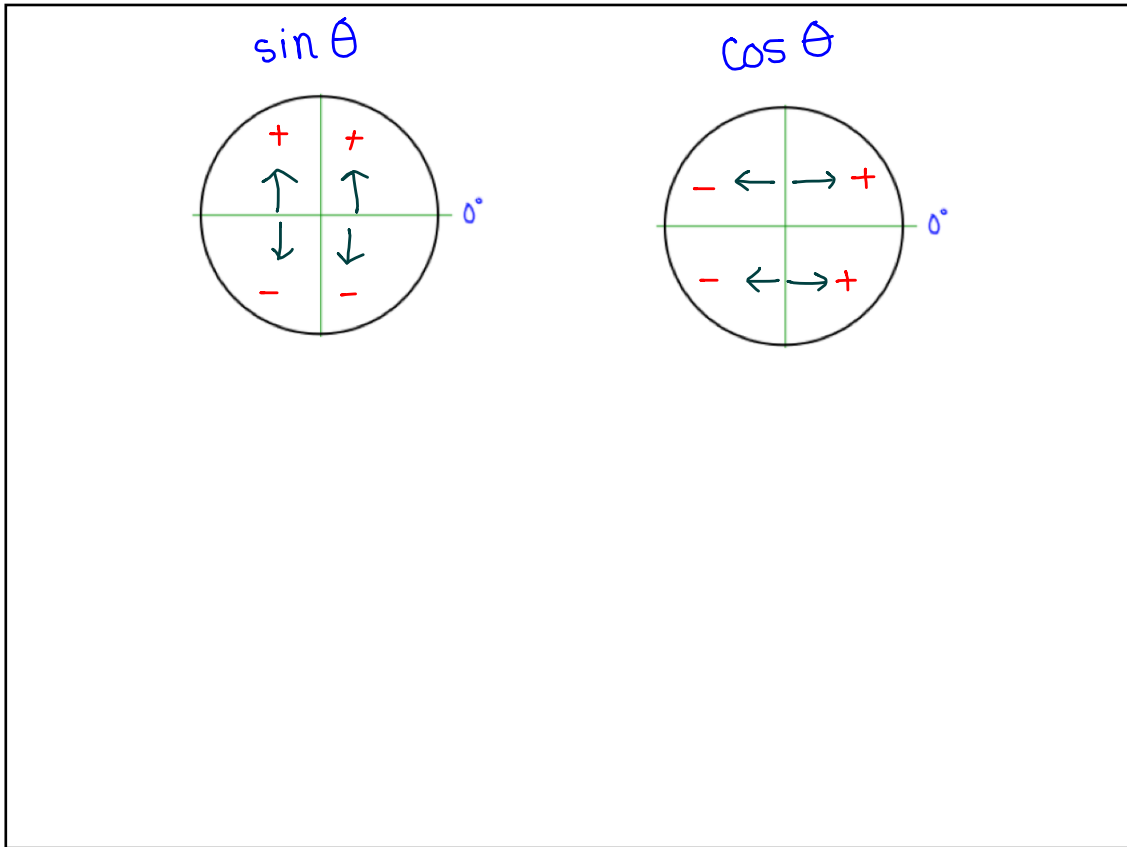
Name another rotation angle with the same cosine value as 70°



$$\cos(70^\circ) = \cos(290^\circ) = \text{Positive cosine value}$$

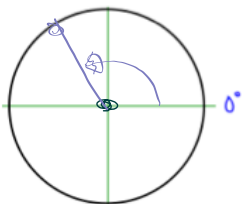
$$\theta = 290$$

$$\begin{array}{r} 360^\circ \\ -70^\circ \\ \hline 290^\circ \end{array}$$



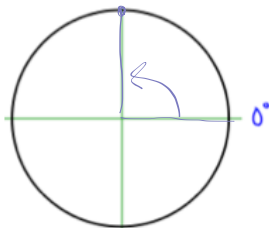
4. Sketch the following:

Sketch an angle with a negative cosine and a positive sine



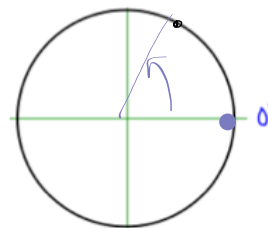
$\sin 90^\circ$

Sketch an angle with a sine value of 1 (and a cosine value of 0).



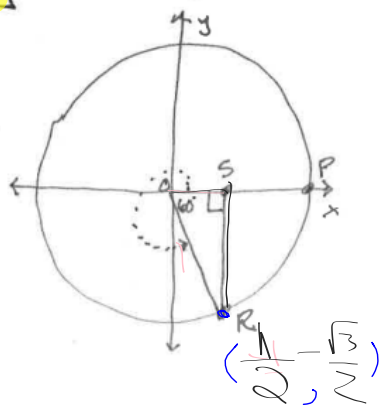
Vertical height of +1

Sketch an angle that has a cosine of about 0.5 and sine value of about 0.9



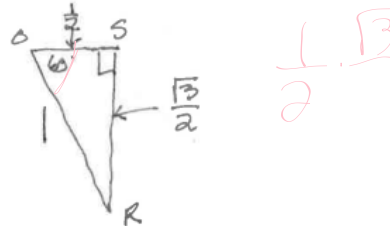
Q

7-55



a) If $\angle ROS$ is 60° ,
then the rotation angle
is 300°

b) If $OR = 1$ (a UNIT CIRCLE)



57

$$2^{2x-3} = 2^{x+3}$$

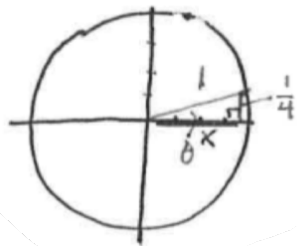
$$\frac{1}{2^3} 2^{(2x-3)} = 2^{x+3}$$

$$2^{-6x+9} = 2^{-x-3}$$

$$-6x+9 = -x-3$$

7-53

If $\sin \theta = \frac{1}{4}$, find exact coordinates of a point on the unit circle.



cos

$$\sin^2 \theta + \cos^2 \theta = 1$$

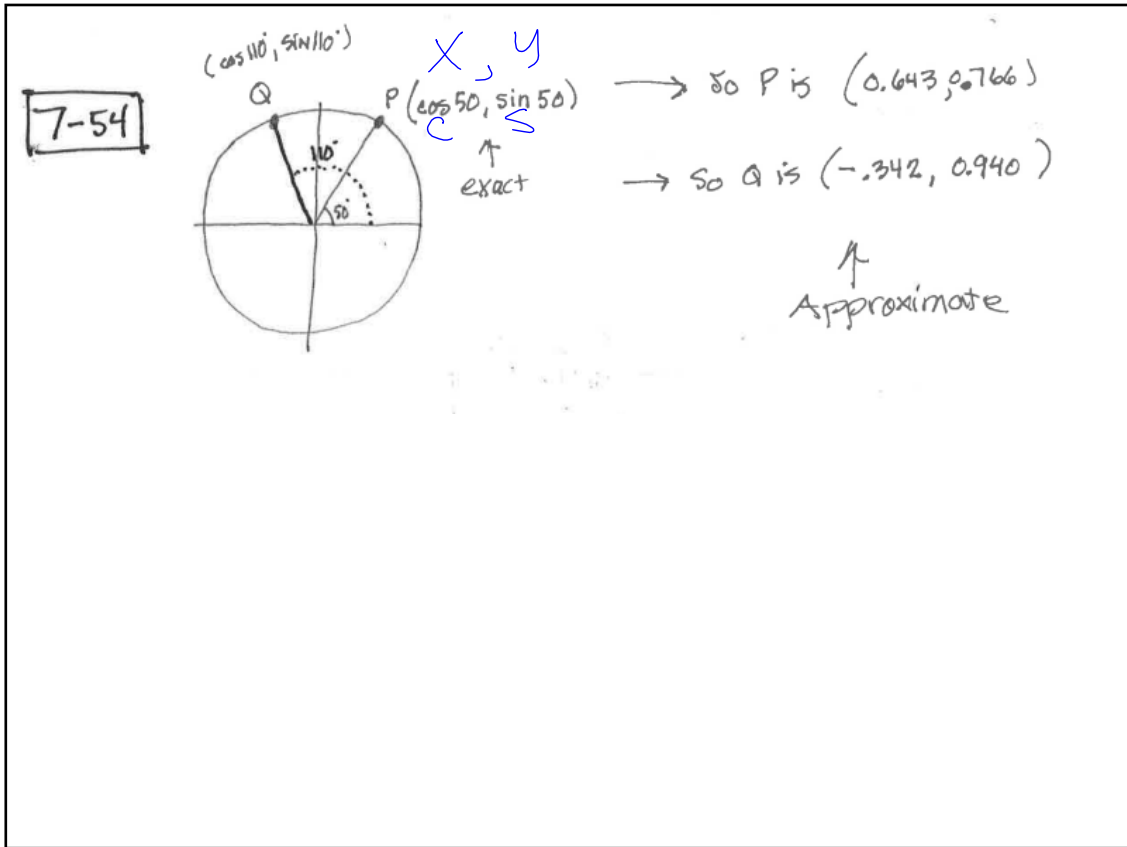
$$\left(\frac{1}{4}\right)^2 + \cos^2 \theta = 1$$

$$\frac{1}{16} + \cos^2 \theta = \frac{16}{16}$$

$$\cos^2 \theta = \frac{15}{16}$$

$$[\cos \theta]^2 = \frac{15}{16}$$

$$\cos \theta = \pm \sqrt{\frac{15}{16}}$$



-60

Rip Off Rentals

\$25 per day, 50¢ per mile

Teacher will charge you

mile	1	2	3
charge	3¢	6	12

a) Cost = $y = 25d + 0.5m$

Cost = $y = 0.03(2)^{m-1}$

b) 2 day trip
10 miles

$y = 25(2) + 0.5(10) = \$55$

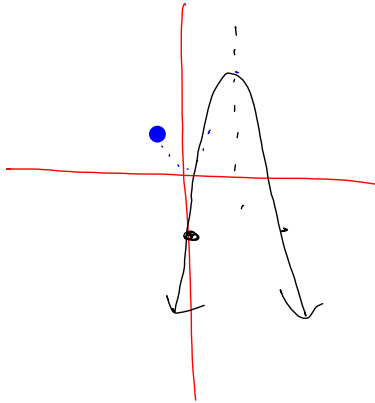
$y = 0.03(2)^{10-1} = \$15.96$

20 miles

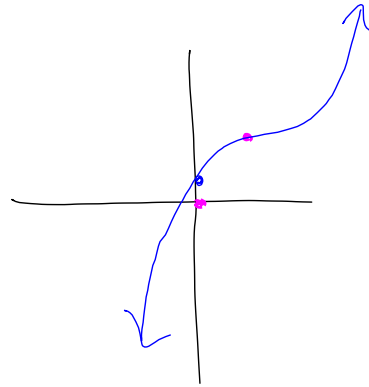
$y = 25(2) + .5(20) = \$60$

$y = .03(2)^{20-1} = \$15,728$

$$58 \quad y = -2(x-2)^2 + 3$$



$$y = (x-1)^3 + 3$$



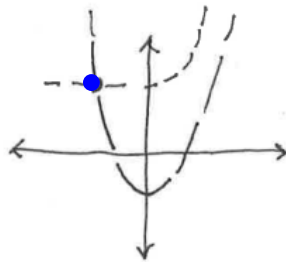
7-59

$$3^x + 5 = x^2 - 5$$

↑
looks
exponential

↑
looks quadratic

Best bet is to
solve graphically
with your calculator
(should draw a sketch)



Intersect at $(-3.167, 5.031)$

So the solution to equation
is $x = -3.167$

7-67 $y = x^2 + 4x - 17$ y-intercept $(0, -17)$

x-intercept $(y=0)$ $0 = x^2 + 4x - 17$ $a=1$
 can't be factored $b=4$
 Use quadratic formula $c=-17$

$$x = \frac{-(-4) \pm \sqrt{(-4)^2 - 4(1)(-17)}}{2(1)}$$

$$= \frac{-4 \pm \sqrt{84}}{2}$$

$$= \frac{-4 \pm 2\sqrt{21}}{2}$$

$$= \frac{2(-2 \pm \sqrt{21})}{2}$$

$$= -2 \pm \sqrt{21}$$

the two x-intercepts are $(-2 + \sqrt{21}, 0)$ and $(-2 - \sqrt{21}, 0)$

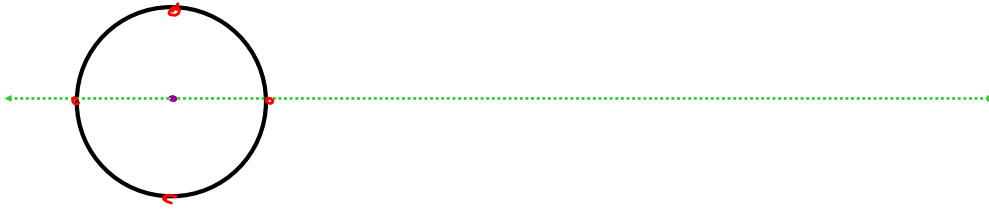
Today :

Analyze **The Cosine Function**

$$f(\theta) = \cos(\theta)$$

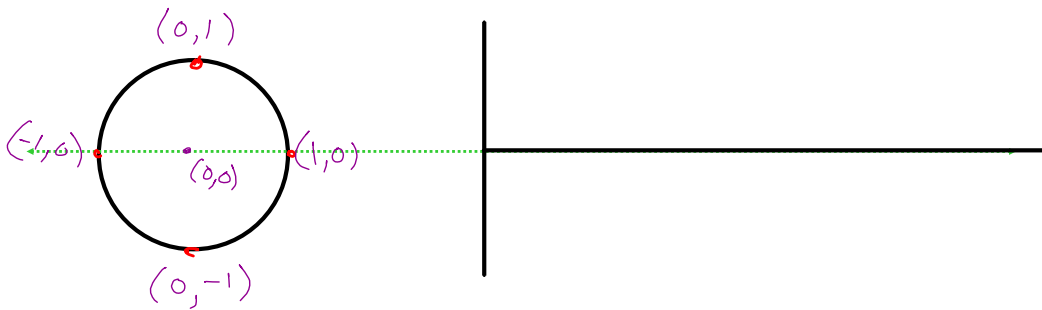
and solve related problems

Draw neatly

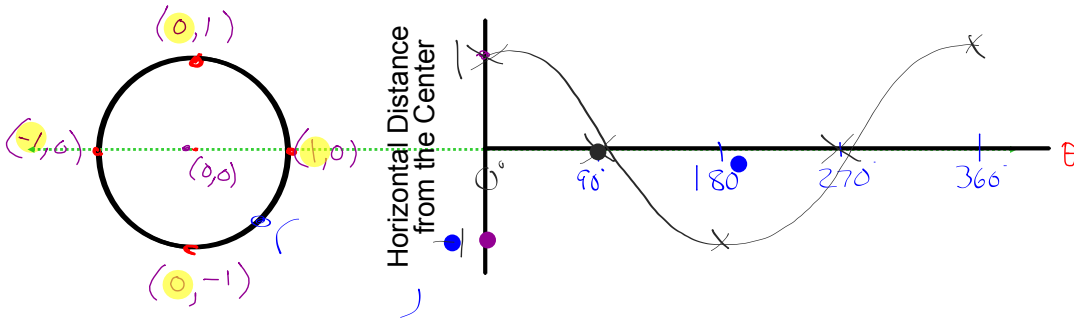


label coordinates

Draw



Draw

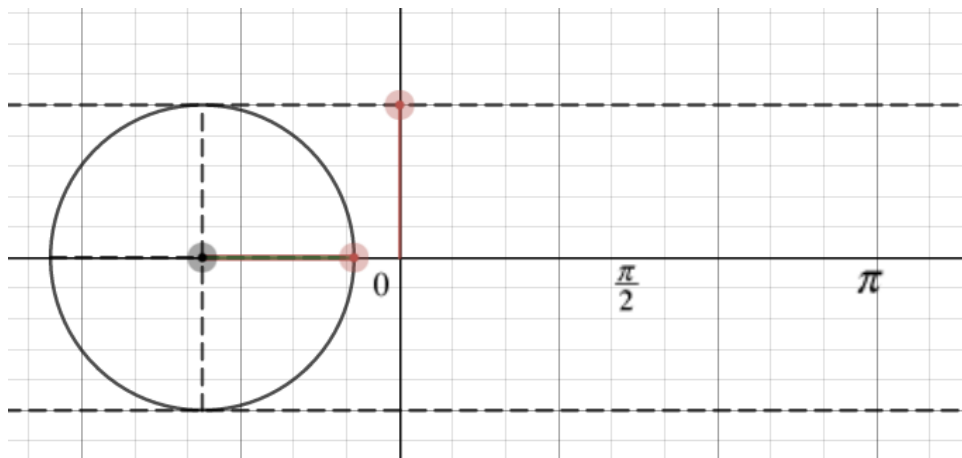


axis of symmetry?

θ - axis intercepts

$$\theta = 90^\circ$$

$$\theta = 270^\circ$$

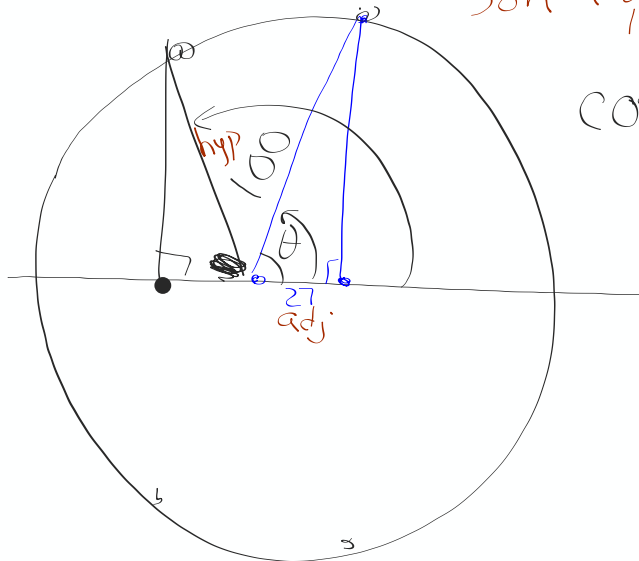
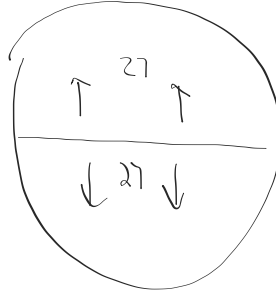
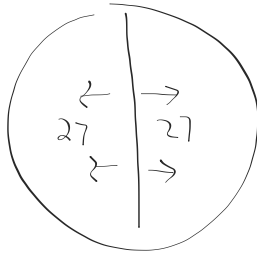


+ GDC

Core
Problem

7-51

- neat diagram
- show work
- Mr. C to check answers when done



Soh Cah Toa

$$\cos(\theta) = \frac{27}{100}$$

$$\theta = \cos^{-1}\left(\frac{27}{100}\right)$$

$$\approx 74.3^\circ$$

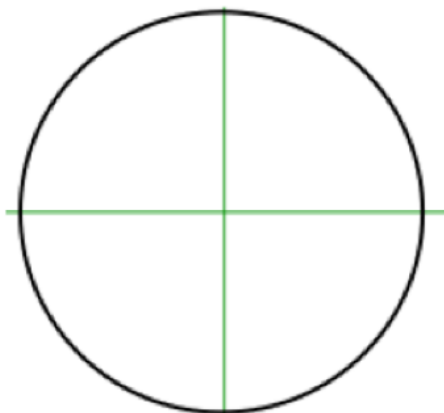
$$105.7^\circ$$

$$254.3^\circ$$

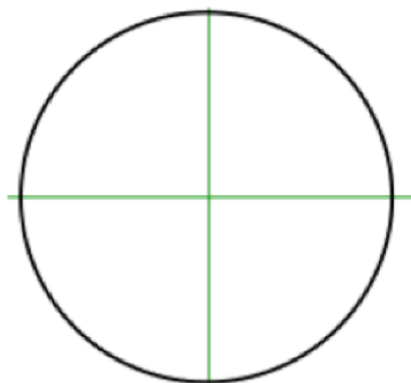
$$285.7^\circ$$

Screamer, 27 horizontal feet away from the center.

What was the Angle of rotation ??



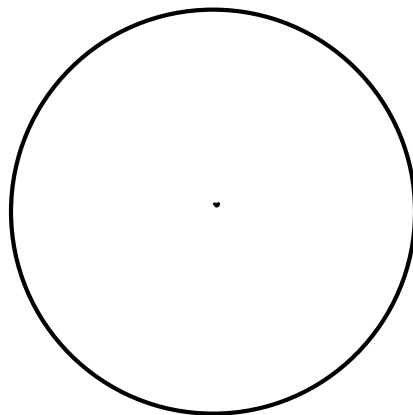
Is there more than one possibility ?



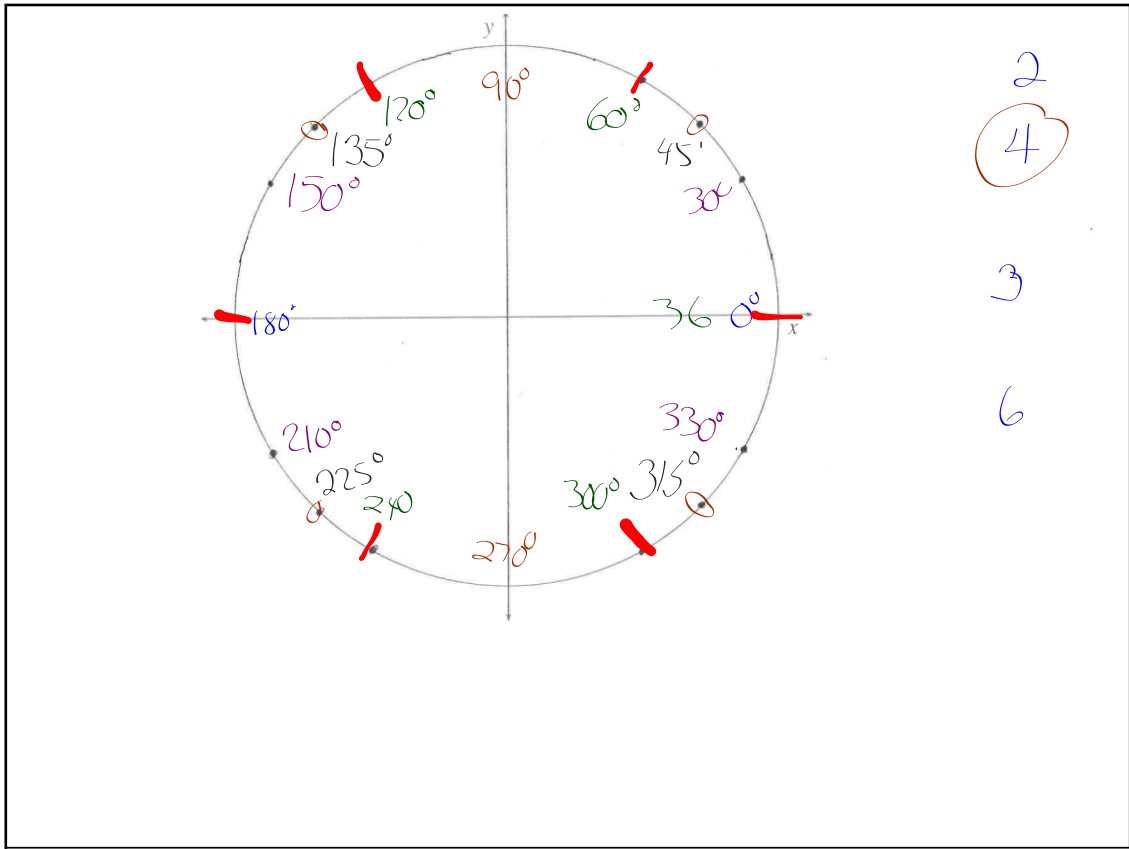
The four possibilities would be:

74.3° , 105.7° , 254.3° , and 285.7°
✓

Prep work for upcoming lessons



1. Draw a Unit Circle.
2. w/ horizontal axis.
3. Add tic marks and angles on the INSIDE for :
 - a) X 90
 - b) X 45
 - c) X 60
 - d) X 30



LCOQ

was yesterday

Assignment:

7....62-65,68ab,69