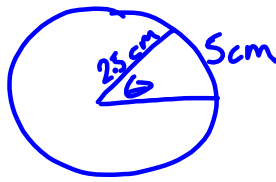


## Homework Questions?

5  
9  
116  
12  
10  
13  
16

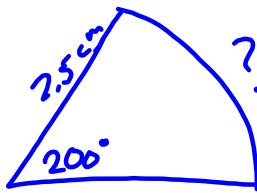
5a)



$$\text{rad} = \frac{\text{arc}}{r} = \frac{5}{2.5} = 2.0$$

$$\text{degrees} = \frac{(2.0)(180)}{\pi} = \frac{360}{\pi} = 114.6^\circ$$

5b)



$$\frac{10\pi}{9} = \frac{x}{2.5}$$

$$200^\circ = \frac{200\pi}{180}$$

$$\frac{25\pi}{9} = x$$

$$\text{radius} = \frac{10\pi}{9}$$

9) a)  $\frac{19\pi}{20} = \frac{x}{65}$

b)  $1.25 = \frac{x}{65}$

$$81.25 = x$$

$$\frac{1235\pi}{20} = x$$

$$61.75\pi = x$$

c)  $\text{rad} = \frac{150\pi}{180} = \frac{5\pi}{6}$

$$\frac{5\pi}{6} = \frac{x}{65}$$

$$\frac{325\pi}{6} = x$$

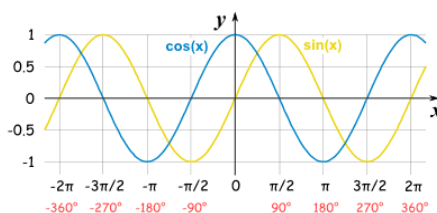
$$\text{rad} = \frac{\text{arc length}}{\text{radius}}$$

## Lesson 6.02 - Radian Measure and Angles on the Cartesian Plane

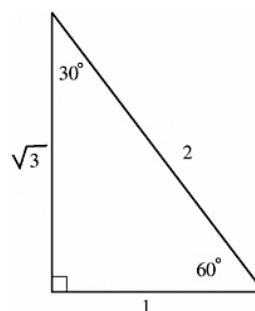
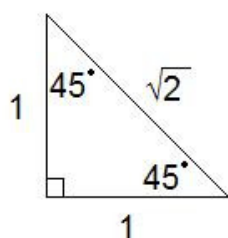


### Learning Goals:

- I can evaluate any trigonometric ratio of any angle expressed in radians on the Cartesian plane.
- I can find the corresponding ratios given in simplest form when given an angle in radians
- I can evaluate trigonometric ratios of any angle that is made from the “special angles” or multiples of  $\frac{\pi}{2}$



### Recall: Special Triangles and Angles



		$y = \sin\theta$	$y = \cos\theta$	$y = \tan\theta$
$0^\circ$	0	$\frac{\sqrt{0}}{2} = 0$	1	0
$30^\circ$	$\frac{\pi}{6}$	$\frac{\sqrt{1}}{2} = \frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2} \times \frac{2}{\sqrt{3}} = \frac{1}{\sqrt{3}}$ or $\frac{\sqrt{3}}{3}$
$45^\circ$	$\frac{\pi}{4}$	$\frac{\sqrt{2}}{2}$ or $\frac{1}{\sqrt{2}}$	$\frac{\sqrt{2}}{2}$	1
$60^\circ$	$\frac{\pi}{3}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$
$90^\circ$	$\frac{\pi}{2}$	$\frac{\sqrt{4}}{2} = 1$	0	undefined

**Recall:** Primary Trig Ratios and Their Reciprocals

$$\sin \theta = \frac{o}{h}$$

$$\cos \theta = \frac{a}{h}$$

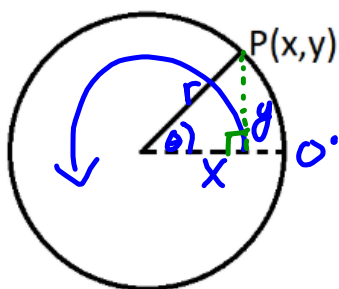
$$\tan \theta = \frac{o}{a}$$

$$\csc \theta = \frac{h}{o}$$

$$\sec \theta = \frac{h}{a}$$

$$\cot \theta = \frac{a}{o}$$

**Recall:** “SYR-CXR-TYX” and Angles in Standard Position



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

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

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

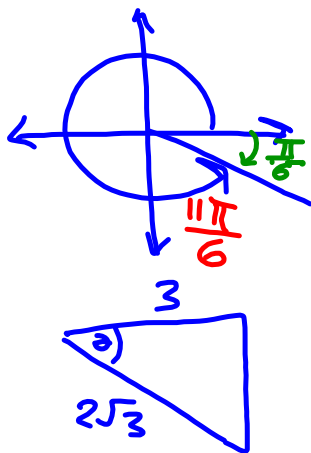
The angle  $\beta$  is termed the related acute angle (or raa).

(Recall: acute refers to an angle greater than 0 degrees but less than 90 degrees)

**Example 1:**

$$\frac{11(180)}{6} = \frac{1980}{6} = 330$$

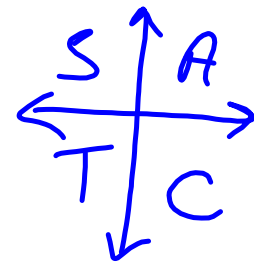
Determine the exact value of  $\sec\left(\frac{11\pi}{6}\right)$  without using your calculator!



$$\sec\left(\frac{\pi}{6}\right) = \frac{1}{\cos\left(\frac{\pi}{6}\right)}$$

$$= \frac{1}{\frac{\sqrt{3}}{2}}$$

$$= \frac{2}{\sqrt{3}} \times \frac{\sqrt{3}}{\sqrt{3}} = \frac{2\sqrt{3}}{3}$$



$$\therefore \sec\left(\frac{11\pi}{6}\right) = \frac{2\sqrt{3}}{3}$$

**Example 2:**

If  $\cos\theta = -\frac{5}{11}$ , where  $0 \leq \theta \leq 2\pi$ , evaluate  $\theta$  to the nearest hundredth

$$\cos\theta = -\frac{5}{11}$$

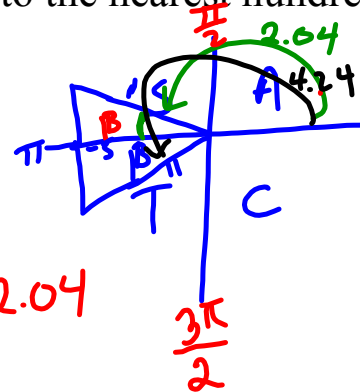
$$\theta = \cos^{-1}\left(-\frac{5}{11}\right)$$

$$\theta \doteq 2.04$$

$$\text{OR}$$

$$\theta = \pi + 1.10$$

$$\doteq 4.24$$



$$\beta = \pi - 2.04$$

$$\doteq 1.10$$

$$\frac{3\pi}{2}$$

**Homework:**

pg 330

#2ab, 3, 5acdf, 6cdef, 7ad,  
11, 13, 15, 16

Challenge: #19

