


## Warm up

- What quadrant am I in?
  - $-200^\circ$
  - $\frac{11\pi}{9}$
  - 5 radians
- Am I positive or negative?
  - $\cos 290^\circ$
  - $\tan \frac{2\pi}{3}$
  - $\csc \frac{\pi}{4}$
- Find the linear speed in miles per hour of a car whose wheel diameter is 15 inches moving 2000 rpm.



Jan 5-6:00 AM



## GO COUGARS!

p 318 **Homework Questions**

In Exercises 1-4, determine the exact values of the six trigonometric functions of the angle  $\theta$ .

3. (a)  (b) 

In Exercises 5-10, the point is on the terminal side of an angle in standard position. Determine the exact values of the six trigonometric functions of the angle.

5. (7, 24)  
7. (-4, 10)  
9. (-3.5, 6.8)

In Exercises 11-14, state the quadrant in which  $\theta$  lies.

11.  $\sin \theta < 0$  and  $\cos \theta < 0$   
13.  $\sin \theta > 0$  and  $\tan \theta < 0$

In Exercises 15-24, find the values of the six trigonometric functions of  $\theta$  with the given constraint.

Function Value	Constraint
15. $\sin \theta = \frac{7}{25}$	$\theta$ lies in Quadrant II.
17. $\tan \theta = -\frac{15}{8}$	$\sin \theta < 0$
19. $\cot \theta = -3$	$\cos \theta > 0$
21. $\sec \theta = -2$	$\sin \theta > 0$
23. $\cot \theta$ is undefined.	$\pi/2 \leq \theta \leq 3\pi/2$

In Exercises 25-28, the terminal side of  $\theta$  lies on the given line in the specified quadrant. Find the values of the six trigonometric functions of  $\theta$  by finding a point on the line.

Line	Quadrant
25. $y = -x$	II
27. $2x - y = 0$	III

In Exercises 37-44, find the reference angle  $\theta'$ , and sketch  $\theta$  and  $\theta'$  in standard position.

37.  $\theta = 203^\circ$   
39.  $\theta = -245^\circ$   
41.  $\theta = \frac{2\pi}{3}$   
43.  $\theta = 3.5$

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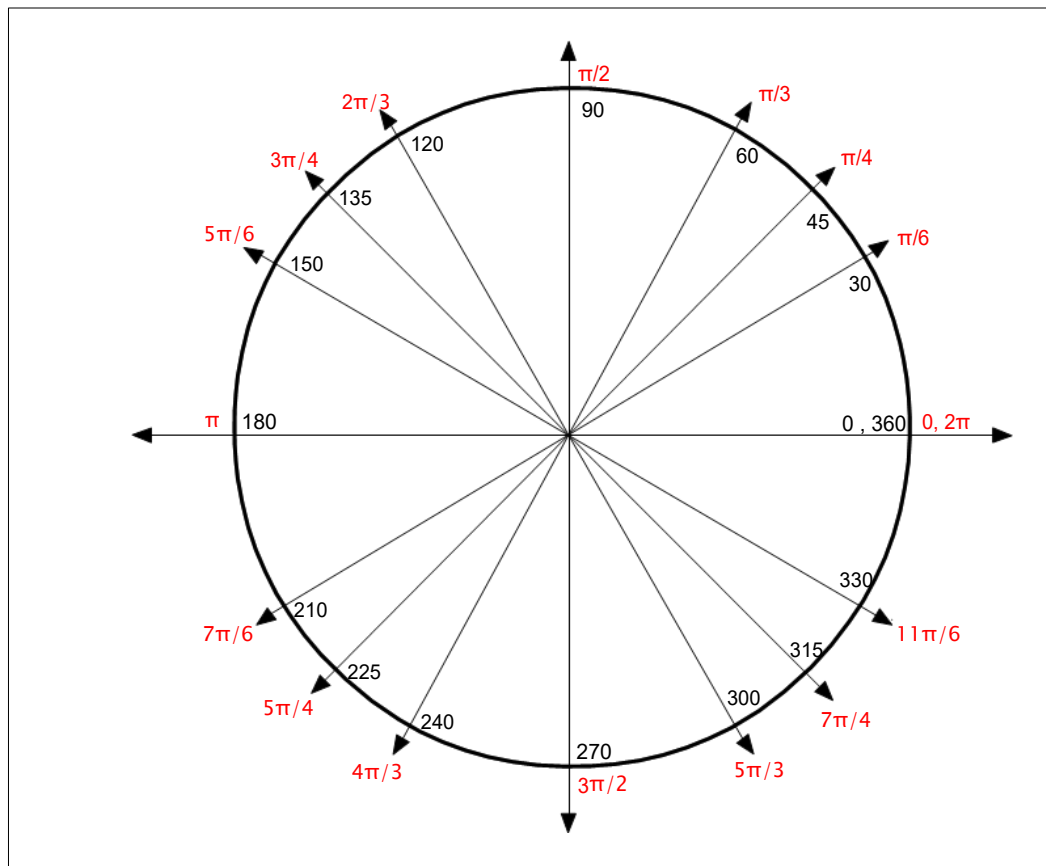
## 4.4 Trig Functions of Any Angle Day 2

Evaluating common angles

Evaluating non-common angles

Finding theta

Jan 5-6:02 AM



Jan 3-2:37 PM

Let's Practice using what we know about reference angles and the signs in the quadrants.

Find the following ratios/values:

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

$$+ \frac{\sqrt{3}}{2}$$

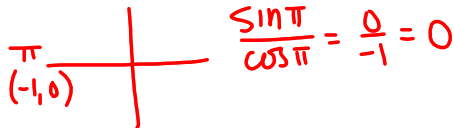


$$\sec 330^\circ$$

$$\frac{\sqrt{3}}{2} + \frac{2}{\sqrt{3}}$$



$$\tan \pi$$

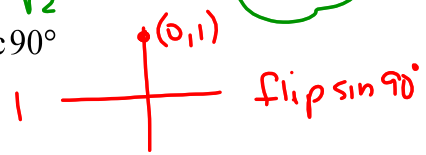


$$\cos 225^\circ$$

$$-\frac{1}{\sqrt{2}}$$



$$\csc 90^\circ$$



$$\cot \frac{7\pi}{4} = -1$$

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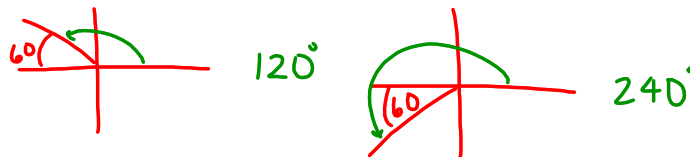
Now let's work backwards -

Given a trig function and its ratio,

find the angle over the interval  $0^\circ \leq \theta < 360^\circ$

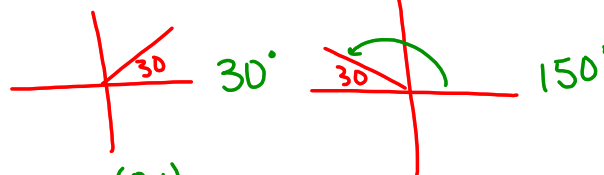
$$\cos \theta = -\frac{\sqrt{3}}{2}$$

Q 2, 3  
RA  $60^\circ$



$$\csc \theta = 2$$

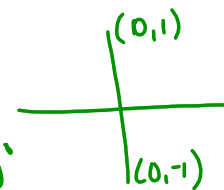
$\sin \theta = \frac{1}{2}$   
Q I II RA =  $30^\circ$



$\tan \theta$  is undefined

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

$$\theta = 90^\circ, 270^\circ$$



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Given a trig function and its ratio,  
find the angle over the interval  $0 \leq \theta < 2\pi$

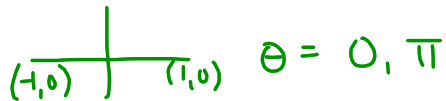
$$\cot \theta = \frac{1}{\sqrt{3}}$$

$$\tan \theta = \sqrt{3}$$

$$\theta = 1, 3 \quad \theta = \frac{\pi}{3}, \frac{4\pi}{3}$$

$$RA = \frac{\pi}{3}$$

$$\sin \theta = 0$$



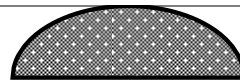
$$\tan \theta = 1$$

$$\theta = 1, 3 \quad \theta = \frac{\pi}{4}, \frac{5\pi}{4}$$

$$RA = \frac{\pi}{4}$$

Jan 9-1:49 PM

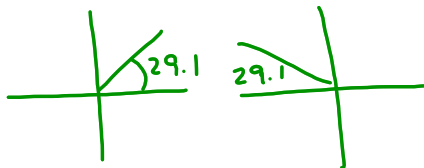
Find  $\theta$  over  $0^\circ \leq \theta < 360^\circ$



$$\sin \theta = 0.4863$$

$$\theta = 1, 2$$

$$RA = 29.1$$



$$29.1$$

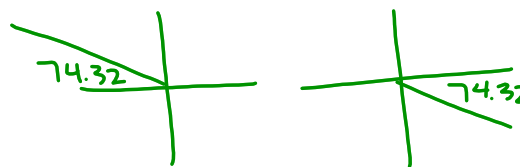
$$180 - 29.1$$

$$150.9$$

$$\tan \theta = -3.5629$$

$$\theta = 2, 4$$

$$RA = 74.32 \text{ drop negative}$$



$$180 - 74.32$$

$$105.68$$

$$360 - 74.32$$

$$285.68$$

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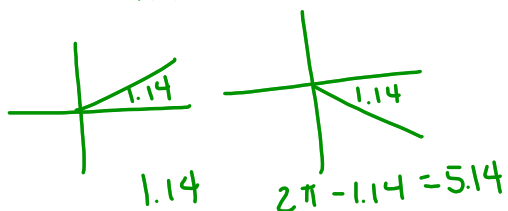
Find  $\theta$  over  $0 \leq \theta < 2\pi$

$$\sec \theta = 2.4065$$

Q 1, 4

RA  $\cos^{-1}\left(\frac{1}{2.4065}\right)$

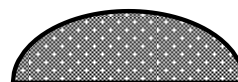
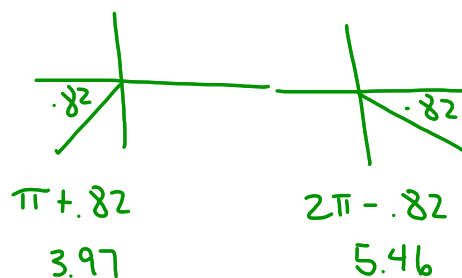
1.14



$$\csc \theta = -1.3621$$

Q 3, 4

RA  $\sin^{-1}\left(\frac{1}{1.3621}\right) = .82$



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## HOMWORK



p 319 29-36 all, 45-57 odd, 69, 71,

75, 81-85 odd

Workbook p 42 1-9 odd

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