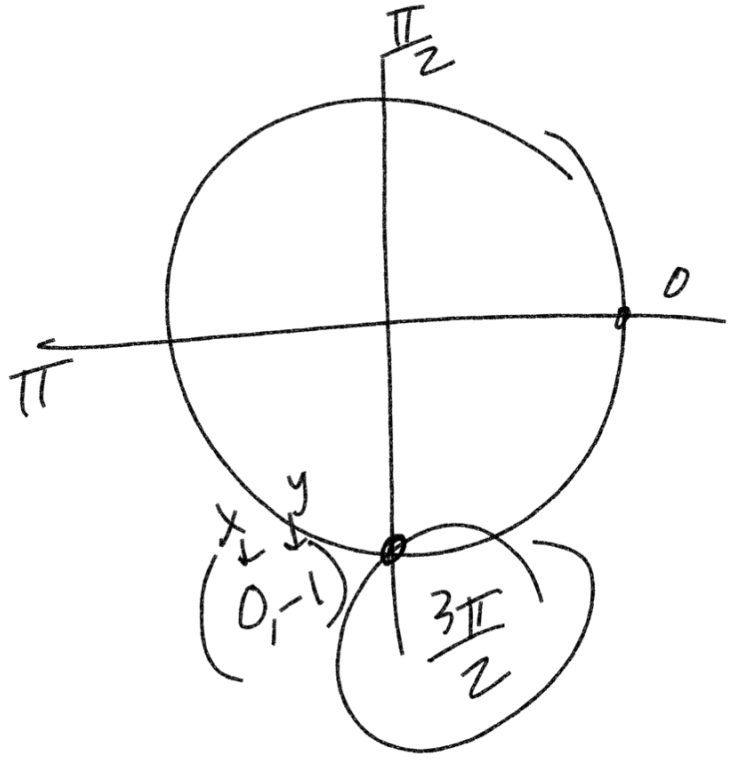


$$y = \tan X$$

$$y = \frac{\sin X}{\cos X}$$

0	$\frac{\sin 0}{\cos 0} = \frac{0}{1} = 0$
$\frac{\pi}{4}$	$\frac{\sin \frac{\pi}{4}}{\cos \frac{\pi}{4}} = \frac{\frac{\sqrt{2}}{2}}{\frac{\sqrt{2}}{2}} = 1$
$\frac{\pi}{2}$	$\frac{\sin \frac{\pi}{2}}{\cos \frac{\pi}{2}} = \frac{1}{0} = \text{undefined}$
$\frac{3\pi}{4}$	$\frac{\sin \frac{3\pi}{4}}{\cos \frac{3\pi}{4}} = \frac{\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = -1$
$\pi$	$\frac{\sin \pi}{\cos \pi} = \frac{0}{-1} = 0$
$\frac{5\pi}{4}$	$\frac{\sin \frac{5\pi}{4}}{\cos \frac{5\pi}{4}} = \frac{-\frac{\sqrt{2}}{2}}{-\frac{\sqrt{2}}{2}} = 1$
$\frac{3\pi}{2}$	$\frac{\sin \frac{3\pi}{2}}{\cos \frac{3\pi}{2}} = \frac{-1}{0} = \text{undef.}$



Calculus & Trigonometry

Chapter 4 & 5 Pre-Test

1.) (10 pts total, 5 pts each) Find the measure of the indicated arc or angle.

a) Find  $m\angle BAC$

Handwritten notes for problem a):

$$\frac{\theta}{360^\circ} = \frac{\text{arc}}{\text{Circumference}}$$

$$\frac{\theta}{360^\circ} = \frac{\text{arc}}{2\pi r}$$

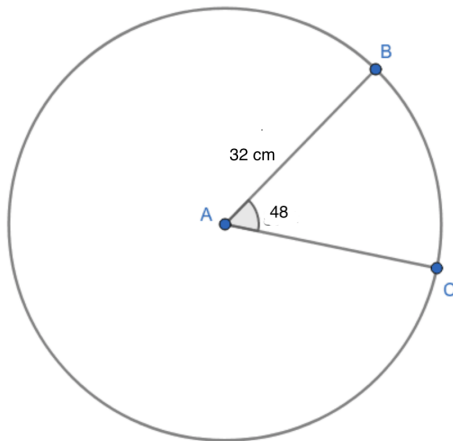
$$\frac{\theta}{360^\circ} = \frac{2}{24\pi}$$

$$12\pi\theta = \frac{360}{12\pi}$$

$$\theta = \frac{360}{12\pi} = \frac{30}{\pi}$$

$$\theta = \boxed{\frac{30}{\pi}}$$

b) Find arc BC



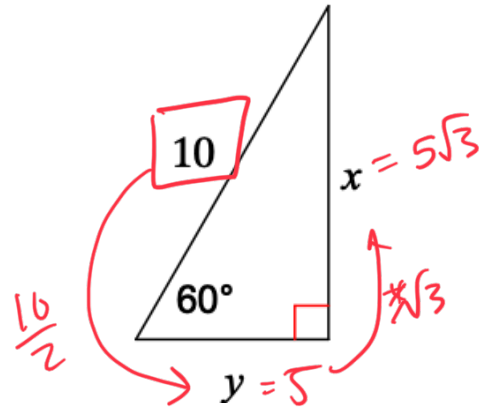


4.) (10 pts total, 2.5 pts each) Solve using special triangles. Please express your answer in radical form.

a)

$$x = 5\sqrt{3}$$

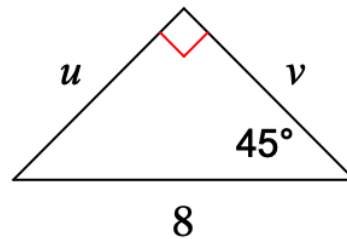
$$y = 5$$



b)

$$u =$$

$$v =$$



Use Unit Circle

5.) (20 pts total, 2 pts each) Provide the value of each. Express in radical form if applicable.

a)  $\cos 120^\circ = -\frac{1}{2}$

b)  $\sin 5\pi/6 = \frac{1}{2}$

c)  $\tan 7\pi/4 = -1$

d)  $\cos 11\pi/6$

e)  $\csc 270^\circ = -1$

f)  $\sin 315^\circ = -\frac{\sqrt{2}}{2}$

f)  $\sec 3\pi/4 = \frac{1}{\cos} = \frac{1}{\frac{\sqrt{2}}{2} \cdot \frac{\sqrt{2}}{2}} = \frac{1}{\frac{2}{4}} = \frac{1}{\frac{1}{2}} = 2$

g)  $\cot 30^\circ = \frac{1}{\tan} = \frac{1}{\frac{1}{\sqrt{3}}} = \sqrt{3}$

i)  $\sec 4\pi/3$

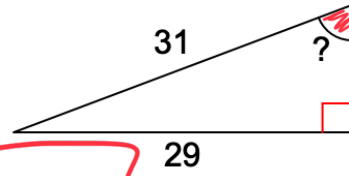
j)  $\cot \pi/2$

6.) (10 pts total, 2.5 pts each) Solve for the indicated variable.

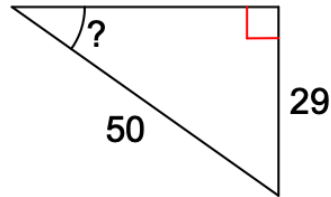
a)

$$\sin \theta = \frac{29}{31}$$

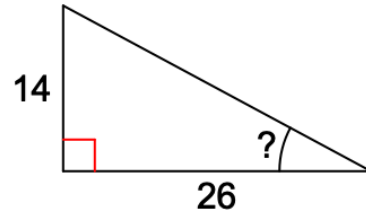
$$\theta = \sin^{-1}\left(\frac{29}{31}\right) = 69.3^\circ$$



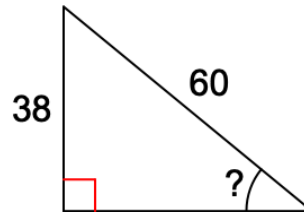
b)



c)



d)



7.) (10 pts total, 5 pts each)

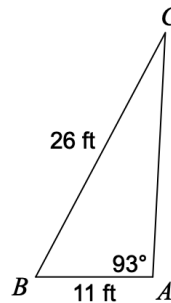
a) Find  $m\angle C$ .

$$\frac{\sin 93}{26} = \frac{\sin C}{11}$$

$$\frac{11 \sin 93}{26} = \frac{26 \sin C}{26}$$

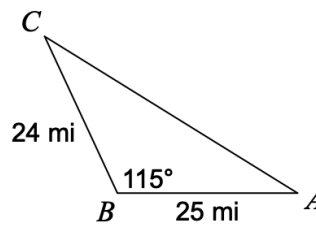
$$\sin C = \frac{11 \sin 93}{26}$$

$$C = \sin^{-1}\left(\frac{11 \sin 93^\circ}{26}\right)$$



b) Find AC. Law of Cosine

$$\sqrt{a^2 + b^2 - 2ab \cos C}$$
$$\sqrt{24^2 + 25^2 - 2(24)(25) \cos 115^\circ}$$
$$= 41.3$$



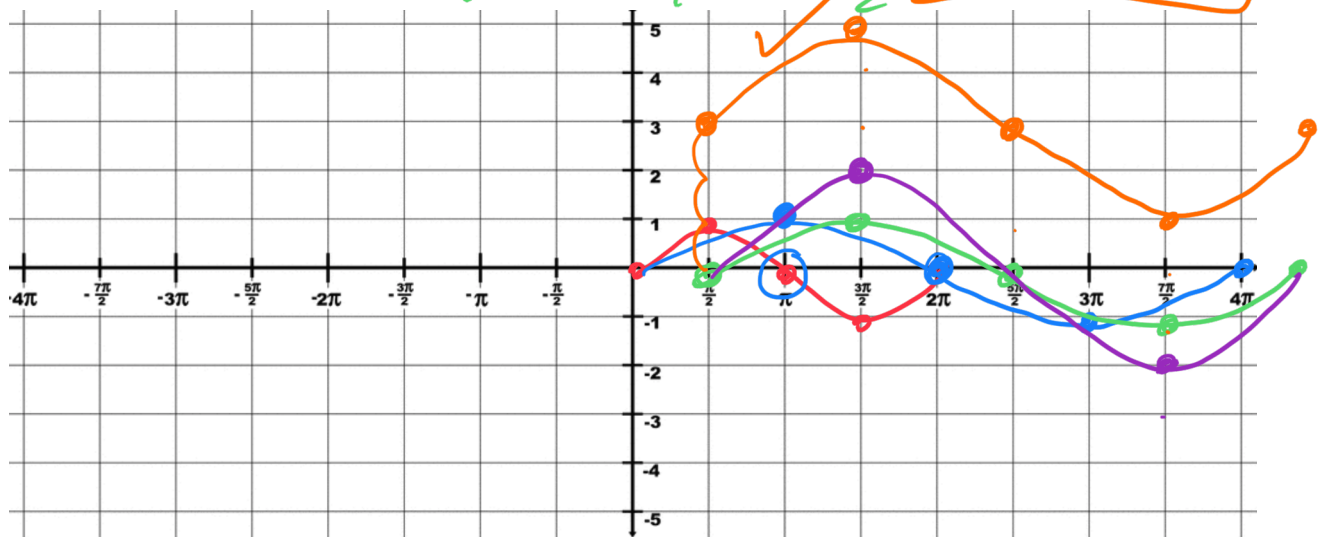
$b = \frac{1}{2}$     period =  $\frac{2\pi}{\frac{1}{2}} = 4\pi$   
 $2\pi \div \frac{1}{2} = 4\pi$   
 $2\pi * 2 = 4\pi$

Draw cos/sin  
 Period  
 horizontal shift  
 amplitude  
 vertical shift

8.) (20 pts total, 10 pts each) Graph each of the following trig functions.

a)  $y = 2\sin\left(\frac{1}{2}x - \frac{\pi}{4}\right) + 3$

$-\frac{\pi}{4} \div \frac{1}{2} = -\frac{\pi}{2}$      $-\frac{\pi}{4} * 2 = -\frac{\pi}{2}$



b)  $y = 3\cos(2x + 3\pi/4) - 1$

