C12 - 4.1 - Degree/Radian Conversion HW

Degrees to Radians: **Radians to Degrees:**

$\frac{180^o}{\pi} = \frac{\pi}{180^o}$ $\times \frac{\pi}{180^o}$ $\times \frac{180^0}{\pi}$

π *and* 180^o *are the same thing, just in different units*

Find θ *in radians*

40^0 60^0 100^0

135^0 10^0 0^0

29^0 420^0 330^0

Find θ *in degrees*

$\frac{\pi}{6}_{rad}$ $\frac{\pi}{12}_{rad}$ $\frac{5\pi}{3}_{rad}$

$\frac{3\pi}{5}_{rad}$ $\frac{2\pi}{5}_{rad}$ $\frac{2\pi}{7}_{rad}$

3.14_{rad} 5.12_{rad} 7_{rad}

2 10 1

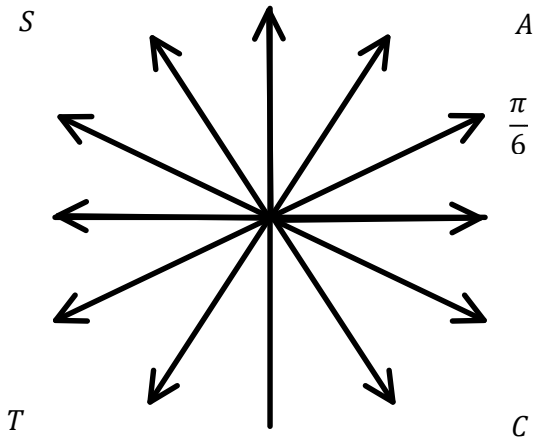
C12 - 4.1 - Fill in blanks degrees/radians WS

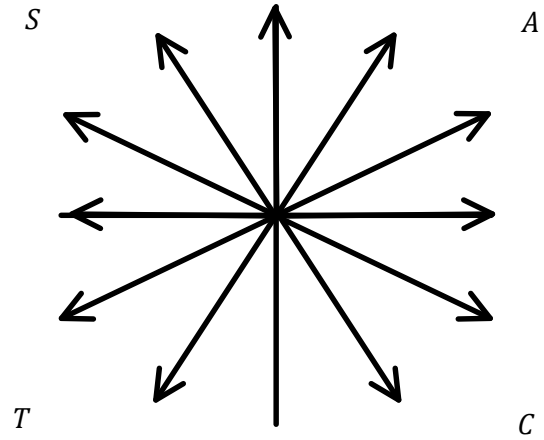
$__15^0___$,	$__30^0___$,	$___45^0__$,	_____,	_____,	_____,	_____,	_____,
$__\frac{\pi}{12}__$,	$__\frac{2\pi}{12}__$,	$__\frac{3\pi}{12}__$,	_____,	_____,	_____,	_____,	_____,
Simplify _____,	_____,	_____	_____,	_____,	_____,	_____,	_____
$__30^0___$,	$__60^0___$,	$___90^0__$,	_____,	_____,	_____,	_____,	_____,
$__\frac{2\pi}{12}__$,	$__\frac{4\pi}{12}__$,	$__\frac{6\pi}{12}__$,	_____,	_____,	_____,	_____,	_____,
_____,	_____,	_____	_____,	_____,	_____,	_____,	_____
$__45^0___$,	$__90^0___$,	$___135^0__$,	_____,	_____,	_____,	_____,	_____,
$__\frac{3\pi}{12}__$,	$__\frac{6\pi}{12}__$,	$__\frac{9\pi}{12}__$,	_____,	_____,	_____,	_____,	_____,
_____,	_____,	_____	_____,	_____,	_____,	_____,	_____
$__60^0___$,	$__120^0___$,	$___180^0__$,	_____,	_____,	_____,	_____,	_____,
$__\frac{4\pi}{12}__$,	$__\frac{8\pi}{12}__$,	$__\frac{12\pi}{12}__$,	_____,	_____,	_____,	_____,	_____,
_____,	_____,	_____	_____,	_____,	_____,	_____,	_____
$__90^0___$,	$__180^0___$,	$___270^0__$,	_____,	_____,	_____,	_____,	_____,
$__\frac{\pi}{2}__$,	$__\frac{2\pi}{2}__$,	$__\frac{3\pi}{2}__$,	_____,	_____,	_____,	_____,	_____,
_____,	_____,	_____,	_____,	_____,	_____,	_____,	_____,
$__180^0___$,	$__360^0___$,	$___540^0__$,	_____,	_____,	_____,	_____,	_____,
$__\pi__$,	$__2\pi__$,	$__3\pi__$,	_____,	_____,	_____,	_____,	_____,
$__360^0___$,	$__720^0___$,	$___1080^0__$,	_____,	_____,	_____,	_____,	_____,
$__2\pi__$,	$__4\pi__$,	$__6\pi__$,	_____,	_____,	_____,	_____,	_____,

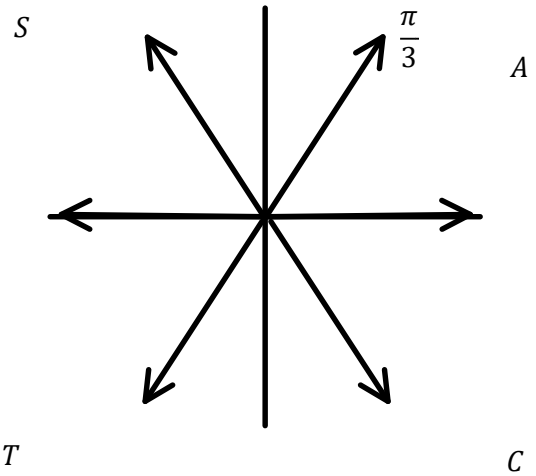
C12 - 4.1 - $\frac{\#\pi}{\#}$ *HMK*

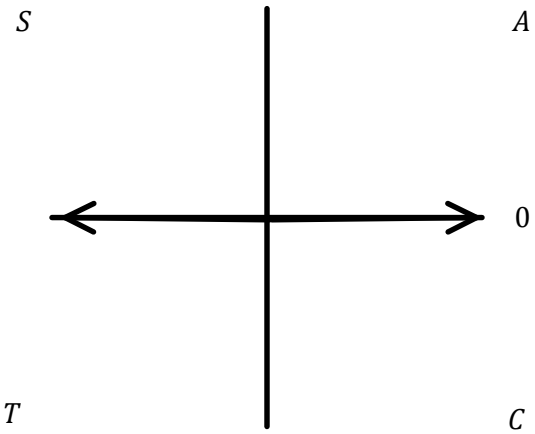
Label each terminal arm θ_{stp}.

Simplify

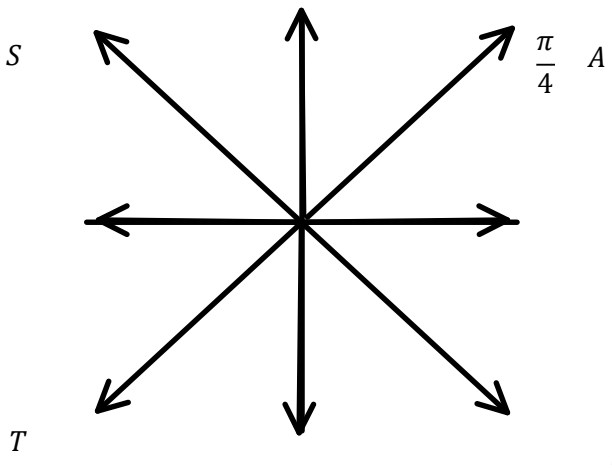


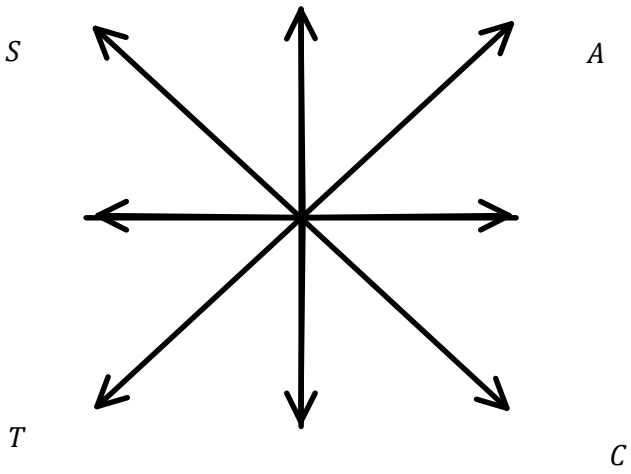






Simplify

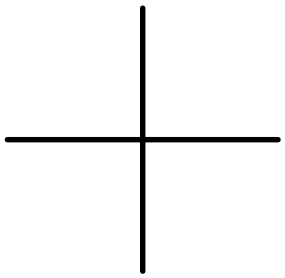




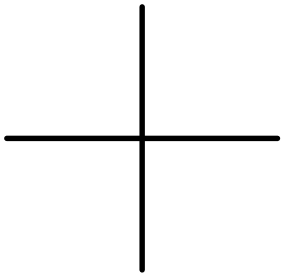
C12 - 4.2 - Special $Sketch\ \theta_{stp}, Find\ \theta_r, HW$

Sketch θ_{stp}, Find θ_r.

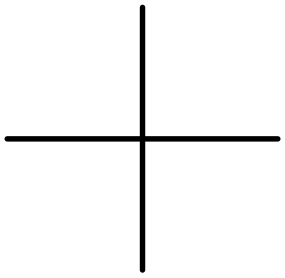
$\frac{\pi}{3}$



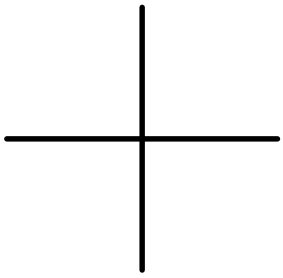
$\frac{5\pi}{4}$



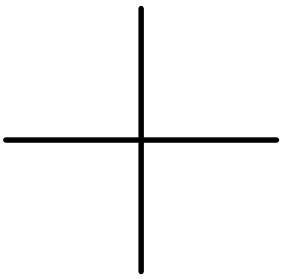
$\frac{\pi}{2}$



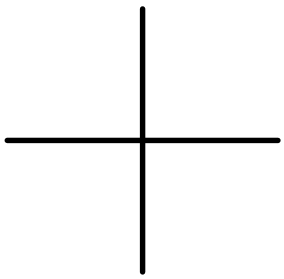
$\frac{11\pi}{6}$



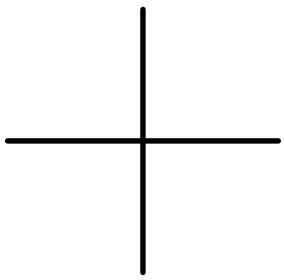
$\frac{4\pi}{3}$



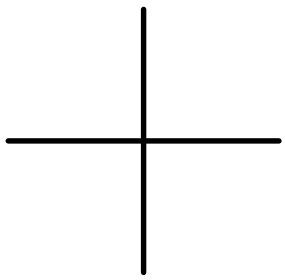
$\frac{\pi}{6}$



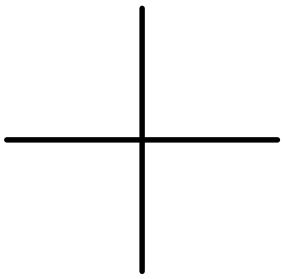
$\frac{\pi}{4}$



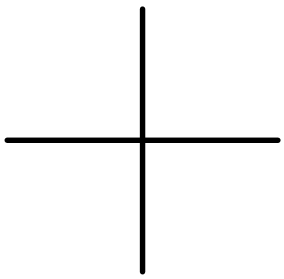
$\frac{5\pi}{6}$



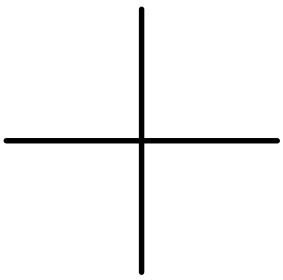
$\frac{7\pi}{4}$



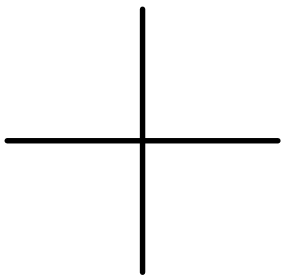
2π



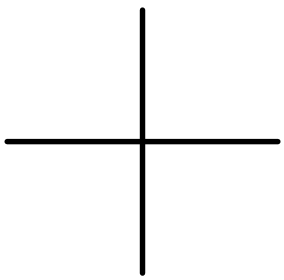
$\frac{3\pi}{4}$



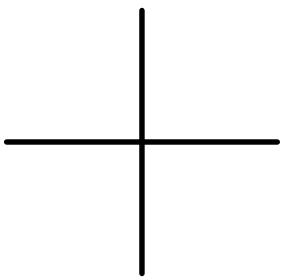
$\frac{3\pi}{2}$



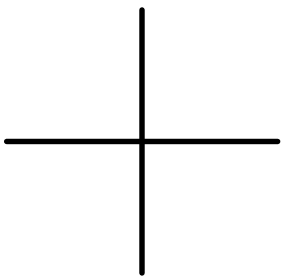
$\frac{5\pi}{3}$



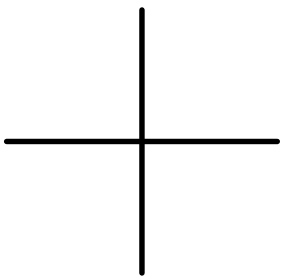
π



$\frac{7\pi}{6}$



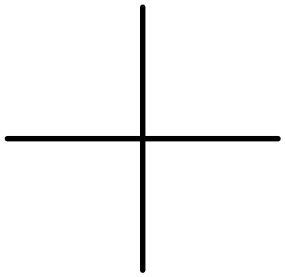
$\frac{2\pi}{3}$



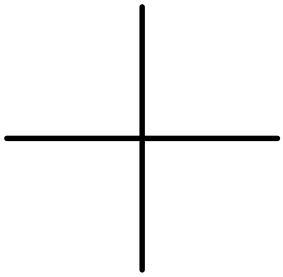
C12 - 4.2 - Odd/Dec $Sketch\ \theta_{stp}, Find\ \theta_r, HW$

$Sketch\ \theta_{stp}$, $Find\ \theta_r$.

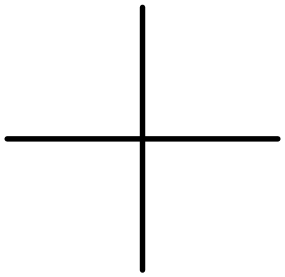
$\frac{\pi}{5}$



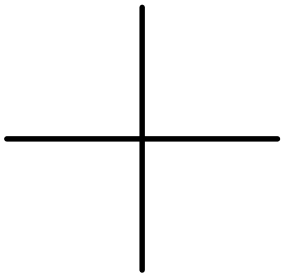
$\frac{5\pi}{7}$



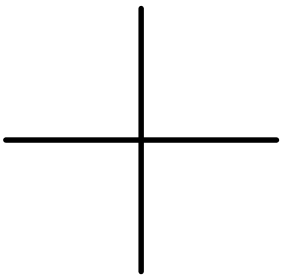
0.64



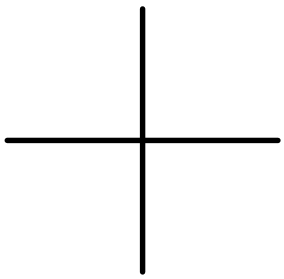
$\frac{11\pi}{12}$



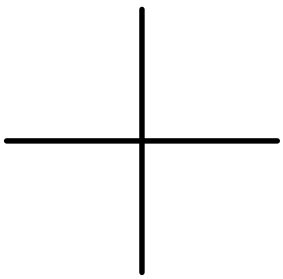
$\frac{4\pi}{5}$



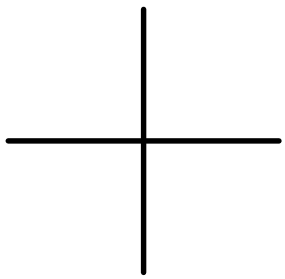
$\frac{\pi}{7}$



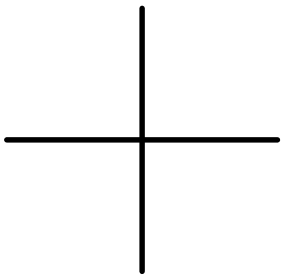
1.70



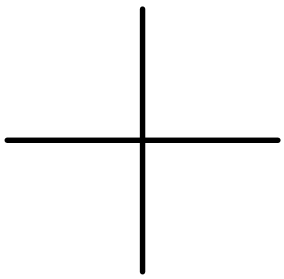
$\frac{5\pi}{8}$



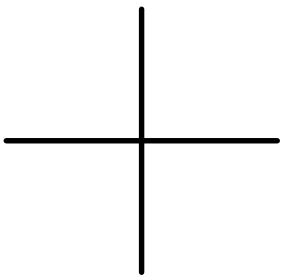
$\frac{7\pi}{12}$



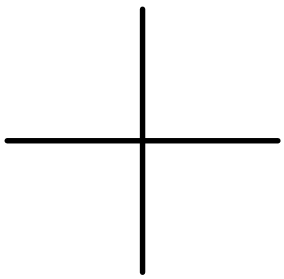
5.2



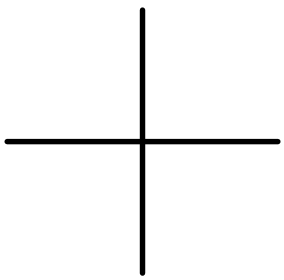
$\frac{3\pi}{8}$



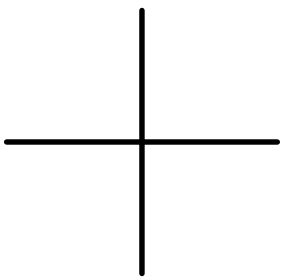
$\frac{3\pi}{5}$



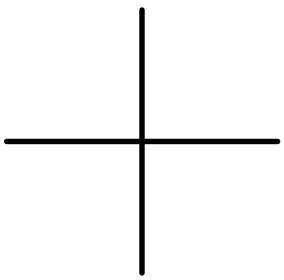
$\frac{5\pi}{11}$



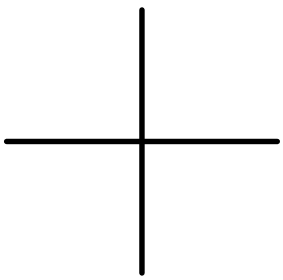
$\frac{3\pi}{11}$



3.6



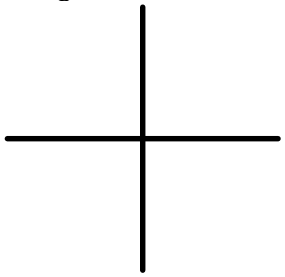
$\frac{2\pi}{9}$



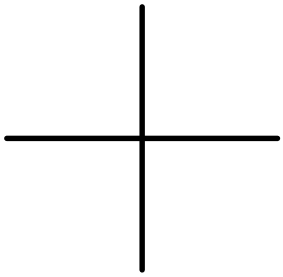
C12 - 4.2 - Cot $Sketch, Find\ \theta_{cot}, \theta_{gen}\ HW$

Sketch θ_{stp}, Find a $\theta_{cot,}$ and θ_{gen}.

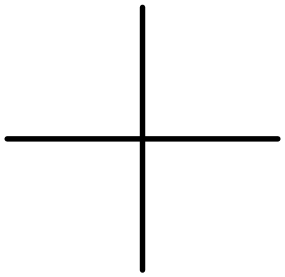
$\frac{\pi}{3}$



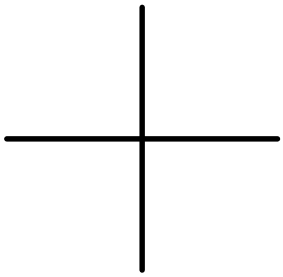
1.67



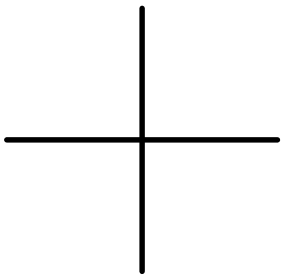
$\frac{\pi}{7}$



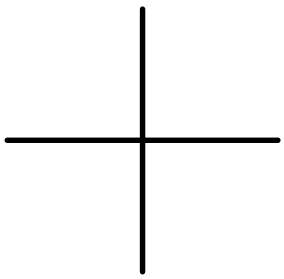
$\frac{3\pi}{4}$



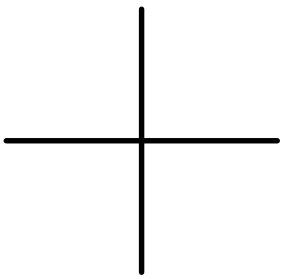
π



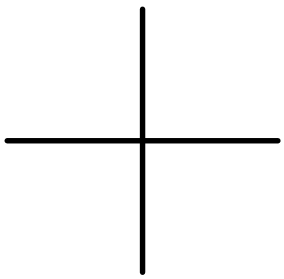
$\frac{\pi}{2}$



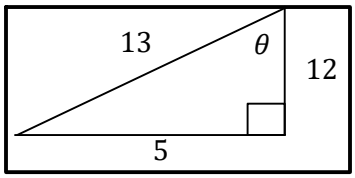
$\frac{3\pi}{5}$



6.28



C12 - 4.3 - Find Ratio/Type in Calc HW



$sin\theta =$ $csc\theta =$ $cos\theta =$ $sec\theta =$ $tan\theta =$ $cot\theta =$

Type in Calculator (Degrees or Radians)

$sin14^0 =$ $csc25^0 =$ $sec105^0 =$ $cot150^0 =$

$cos274^0 =$

$sin60^0 =$

$\tan(-240^0) =$

$sin1.7 =$ $csc5.9 =$ $\sec\left(\frac{2}{7}\right) =$ $cot0.6 =$

$\cos\frac{\pi}{6} =$

$\tan(3\pi) =$

$cos2\pi =$

Find θ in Degrees

$sin\theta = \frac{3}{8}$ $sec\theta = \frac{7}{3}$

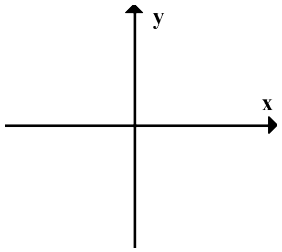
Find θ in Radians

$cos\theta = 0.9$ $cot\theta = 5$

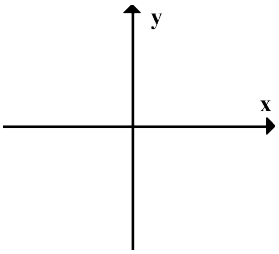
C12 - 4.3 - ASTC *HW*

Draw 2 triangles in the quadrants for the following statements

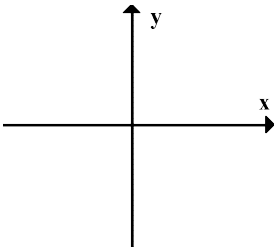
$\cos\theta > 0$



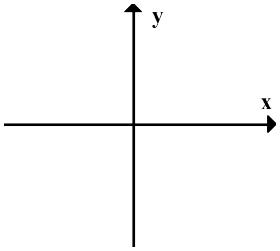
$\tan\theta > 0$



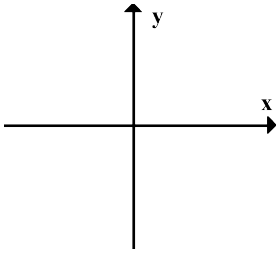
$\sin\theta > 0$



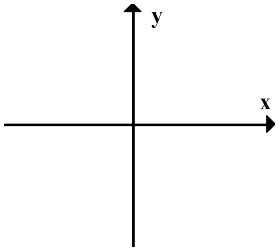
$\cos\theta < 0$



$\tan\theta < 0$

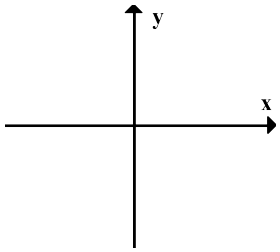


$\sin\theta < 0$

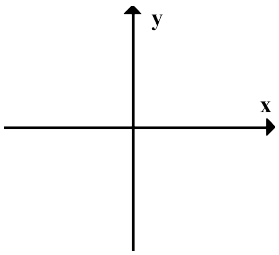


Draw a triangle in the quadrant for following statements

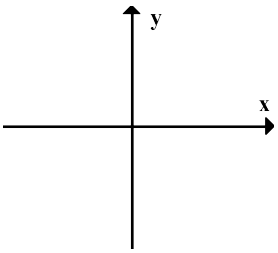
$\cos\theta > 0$ *and* $\sin\theta < 0$



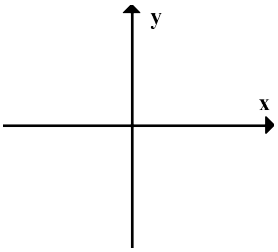
$\cos\theta < 0$ *and* $\tan\theta > 0$



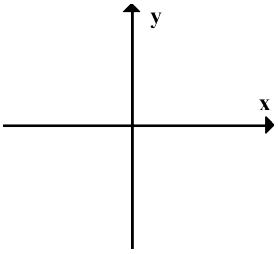
$tan\theta > 0$ *and* $\sin\theta > 0$



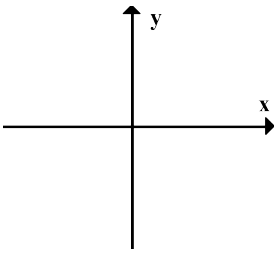
$\cos\theta < 0$ *and* $\sin\theta < 0$



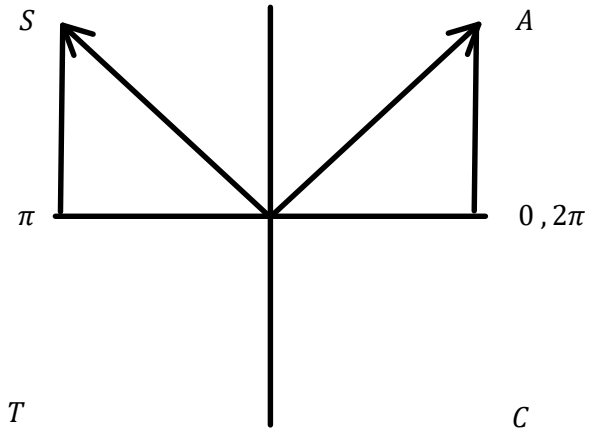
$\cos\theta < 0$ *and* $\tan\theta < 0$

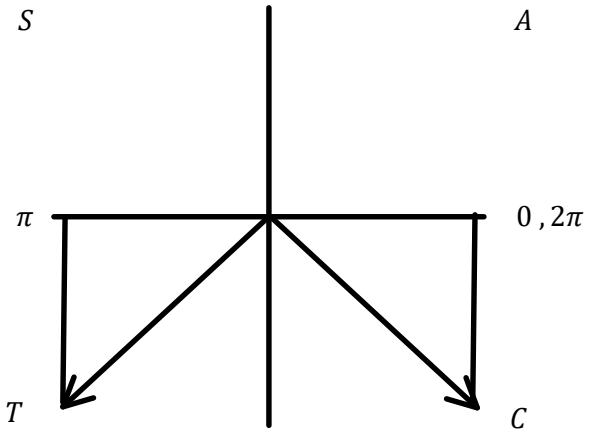


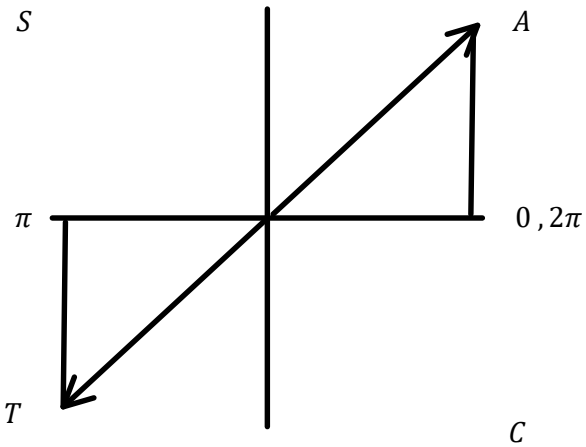
$tan\theta < 0$ *and* $\sin\theta > 0$

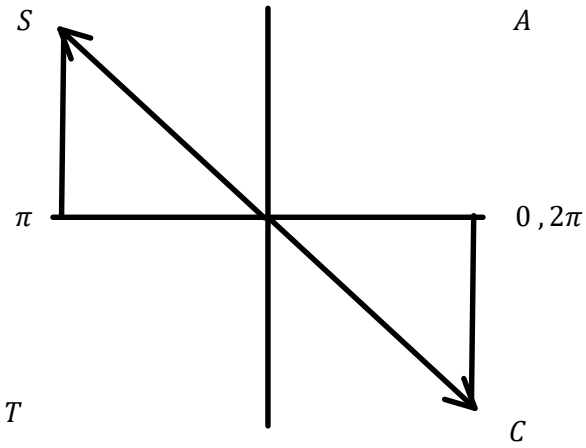


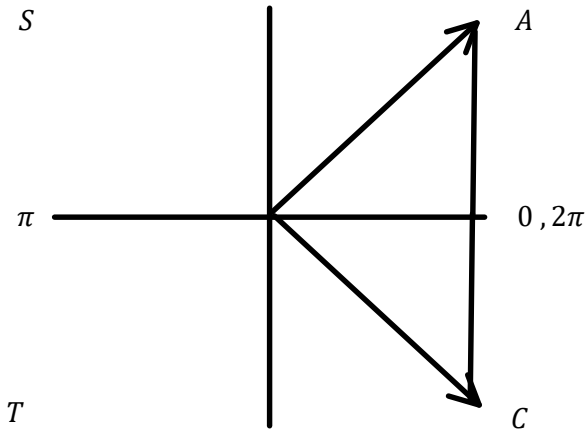
C12 - 4.3 - Draw $\theta_{stp}\ 0 \leq \theta < 2\pi\ HMK$

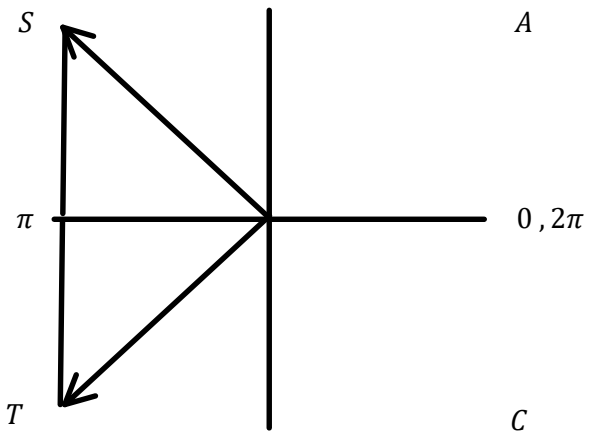








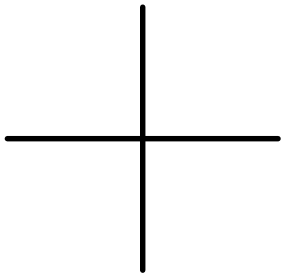




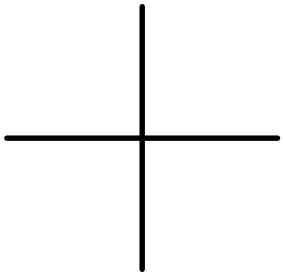
C12 - 4.3 - Solve $sin\theta, cos\theta, tan\theta = ?$ HMK

Solve

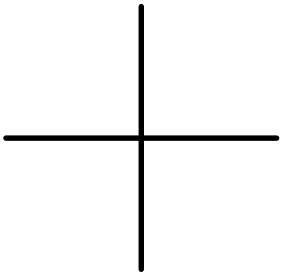
$sin\frac{\pi}{3} =$



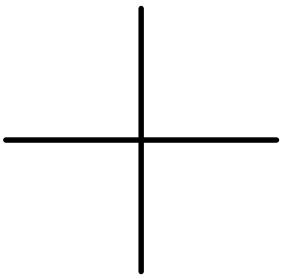
$tan\frac{5\pi}{4} =$



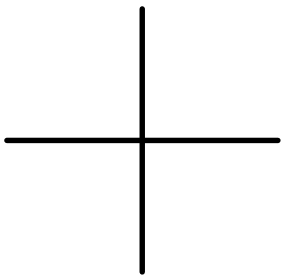
$sin\frac{11\pi}{6} =$



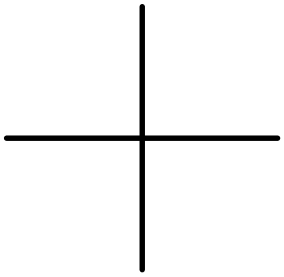
$sin\frac{4\pi}{3} =$



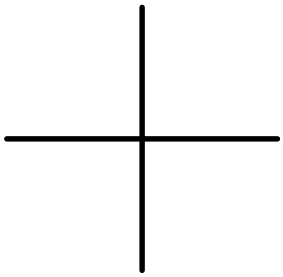
$cos\frac{\pi}{6} =$



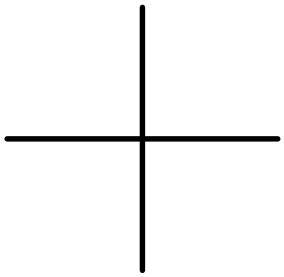
$tan\frac{\pi}{4} =$



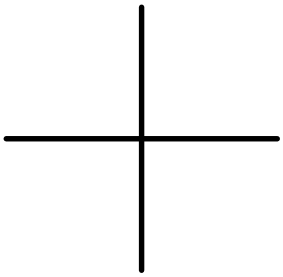
$tan\frac{7\pi}{4} =$



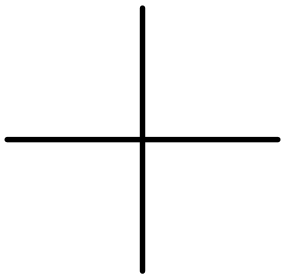
$sin\frac{5\pi}{6} =$



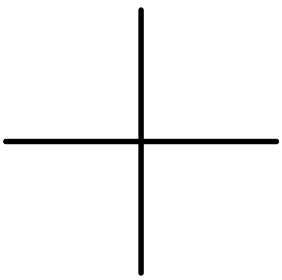
$cos\frac{3\pi}{4} =$



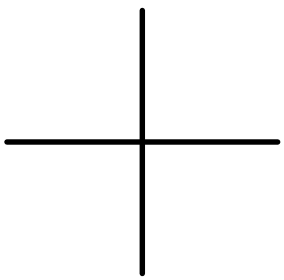
$sin\frac{5\pi}{3} =$



$tan\frac{7\pi}{6} =$



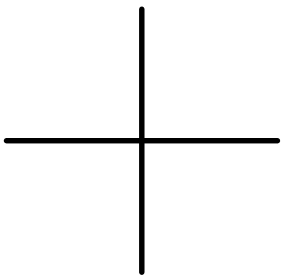
$sin\frac{2\pi}{3} =$



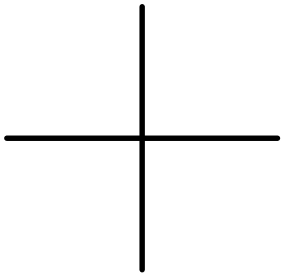
C12 - 4.3 - Solve sinx=$\frac{1}{2}$ HW

Solve for $x, 0 \le x < 2\pi$, *answer should say* $x =$

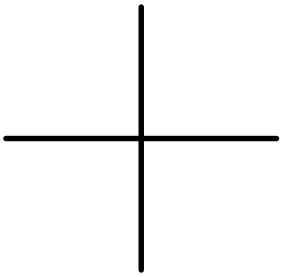
$sinx = \frac{1}{2}$



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

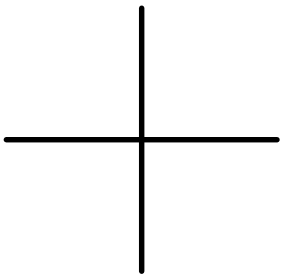


$tanx = -1$

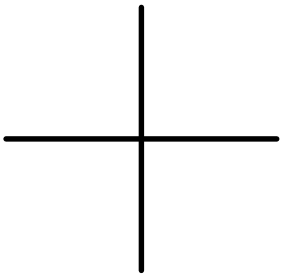


*rationalize

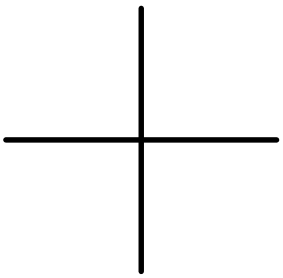
$sinx = \frac{\sqrt{3}}{2}$



$cosx = \frac{\sqrt{2}}{2}$



$sinx = -\frac{1}{2}$



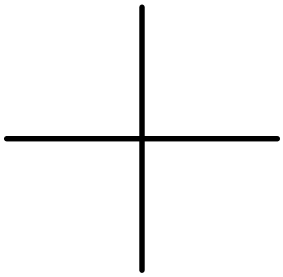
$cosx = \frac{1}{2}$ $sinx = -\frac{1}{\sqrt{2}}$ $tanx = -\frac{1}{\sqrt{3}}$ $cosx = -2$ $tanx = \sqrt{3}$ $tanx = \frac{1}{\sqrt{3}}$

$cosx = -\frac{\sqrt{3}}{2}$ $tanx = 1$ $sinx = -\frac{\sqrt{3}}{2}$ $tanx = -\sqrt{3}$ $sinx = \frac{1}{\sqrt{2}}$ $cosx = \frac{\sqrt{3}}{2}$

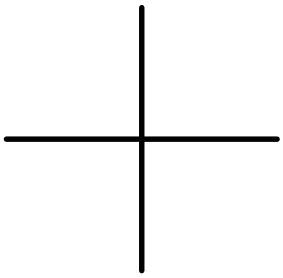
C12 - 4.3 - $sin\theta = 0.8$ HW

Solve for $x, 0 \leq x < 2\pi$, *answer should say* $x =$

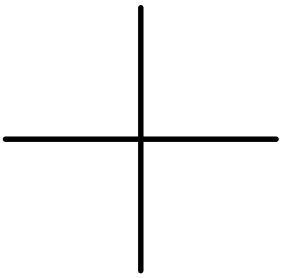
$tanx = -2$



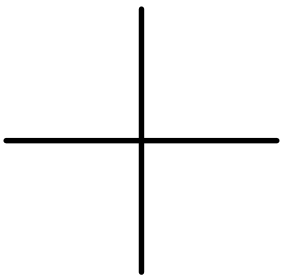
$sinx = 0.6$



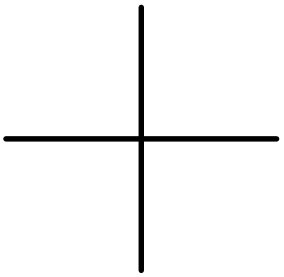
$cosx = \frac{1}{4}$



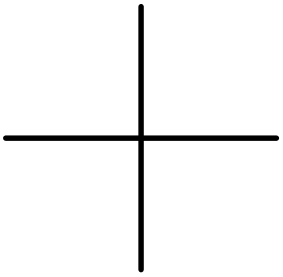
$sinx = -0.4$



$tanx = \frac{1}{5}$



$cosx = 2$



$sinx = -0.1$ $\quad$ $tanx = \frac{4}{5}$ $\quad$ $sinx = -0.8$ $\quad$ $cosx = -\frac{1}{5}$ $\quad$ $tanx = -0.707$ $\quad$ $sinx = \frac{1}{3}$

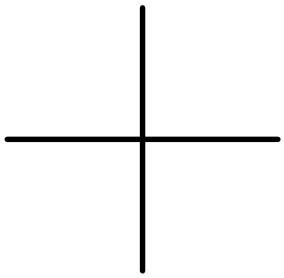
$cosx = -0.5$ $\quad$ $cosx = 0.75$ $\quad$ $tanx = -0.866$ $\quad$ $cosx = -0.65$ $\quad$ $sinx = -\frac{2}{3}$ $\quad$ $tanx = 0.35$

C12 - 4.3 - Point Trig Ratio HW

SOH CAH TOA

Find all 6 trig functions for the following points. And Find the Reference Angle and Angle in Standard Position.

(4,3)



$\theta_r =$

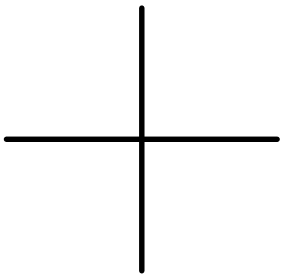
$\theta_{stp} =$

$sinx =$ $cscx =$

$cosx =$ $secx =$

$tanx =$ $cotx =$

$(-3,4)$



$\theta_r =$

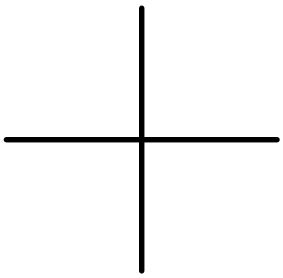
$\theta_{stp} =$

$sinx =$ $cscx =$

$cosx =$ $secx =$

$tanx =$ $cotx =$

(2,3)



$\theta_r =$

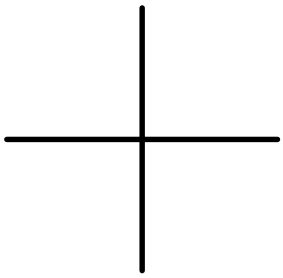
$\theta_{stp} =$

$sinx =$ $cscx =$

$cosx =$ $secx =$

$tanx =$ $cotx =$

$(5,-6)$



$\theta_r =$

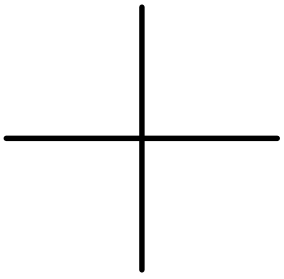
$\theta_{stp} =$

$sinx =$ $cscx =$

$cosx =$ $secx =$

$tanx =$ $cotx =$

$(-5,12)$



$\theta_r =$

$\theta_{stp} =$

$sinx =$ $cscx =$

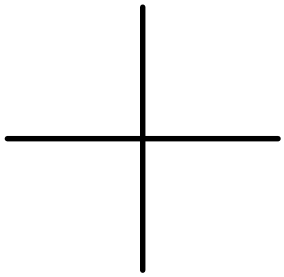
$cosx =$ $secx =$

$tanx =$ $cotx =$

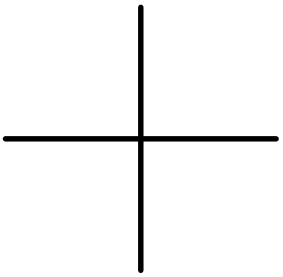
C12 - 4.3 - Solve $csc\theta, sec\theta, cot\theta = ?$ *HMK*

Solve

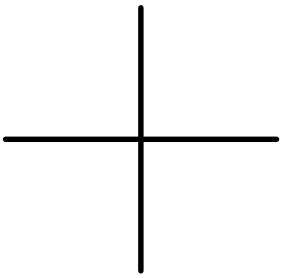
$cot\frac{\pi}{3} =$



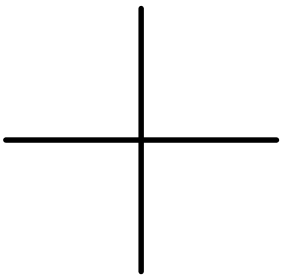
$sec\frac{5\pi}{4} =$



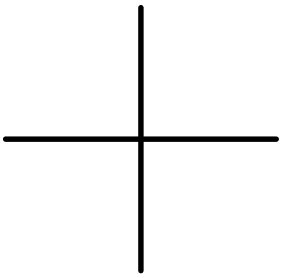
$sec\frac{11\pi}{6} =$



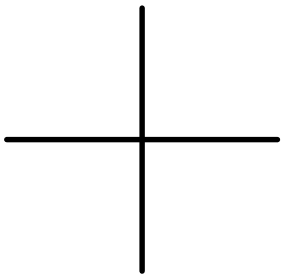
$sec\frac{4\pi}{3} =$



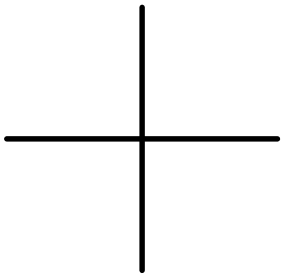
$csc\frac{\pi}{6} =$



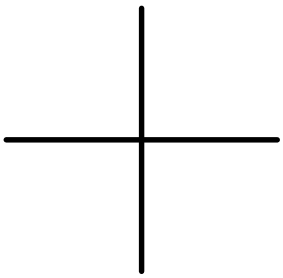
$cot\frac{5\pi}{6} =$



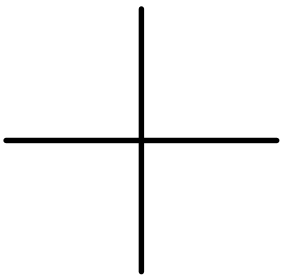
$csc\frac{7\pi}{4} =$



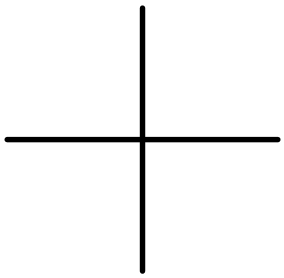
$cot\frac{\pi}{4} =$



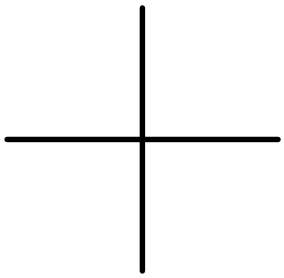
$sec\frac{3\pi}{4} =$



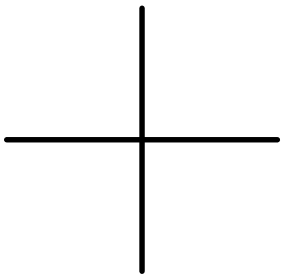
$sec\frac{5\pi}{3} =$



$csc\frac{7\pi}{6} =$



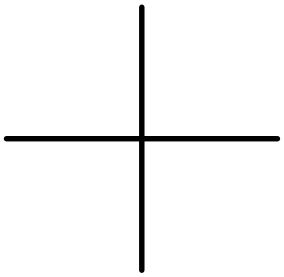
$cot\frac{2\pi}{3} =$



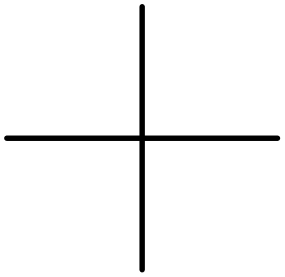
C12 - 4.3 - Solve cscx=2 HW

Solve for $x, 0 \leq x < 2\pi$, *answer should say* $x =$

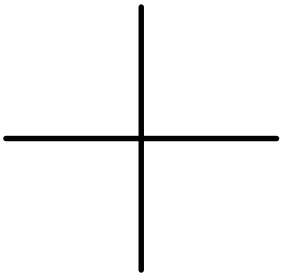
$secx = 2$



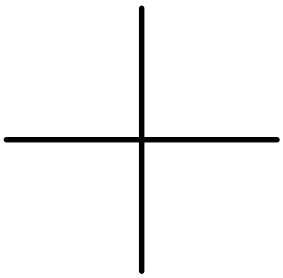
$cscx = -\frac{1}{\sqrt{2}}$



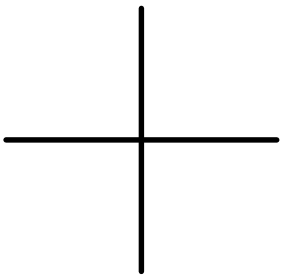
$cotx = -1$



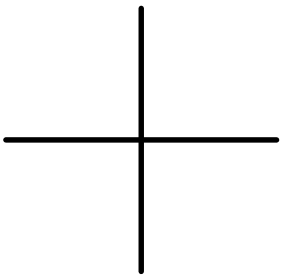
$cscx = \frac{\sqrt{3}}{2}$



$cotx = \sqrt{3}$



$secx = -\sqrt{2}$



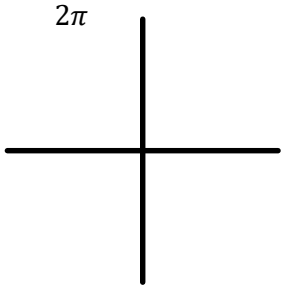
$cscx = 2$ $\quad$ $secx = -2$ $\quad$ $cotx = -\frac{1}{\sqrt{3}}$ $\quad$ $cscx = -2$ $\quad$ $cotx = -\sqrt{3}$

$sinx = -\frac{\sqrt{3}}{2}$ $\quad$ $cotx = 1$ $\quad$ $secx = -\frac{\sqrt{3}}{2}$ $\quad$ $secx = \frac{1}{\sqrt{2}}$ $\quad$ $cscx = \frac{\sqrt{3}}{2}$

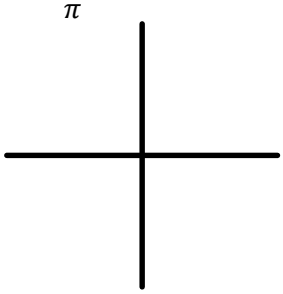
C11 - 4.4 - Unit Circle Quadrantal Angle HW

Sketch θ_{stp}, Label the point on the unit circle.

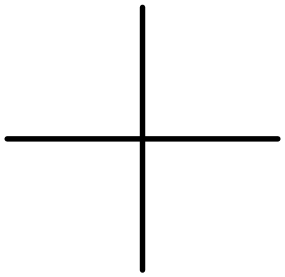
2π



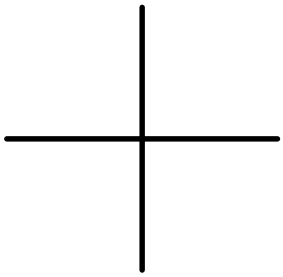
π



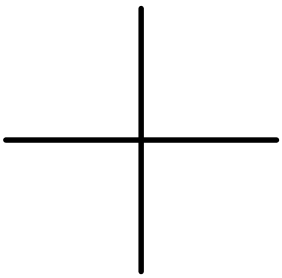
$\frac{3\pi}{2}$



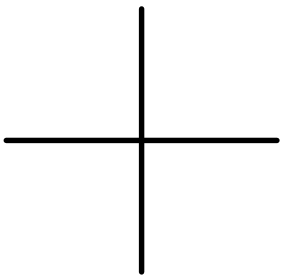
$\frac{\pi}{2}$



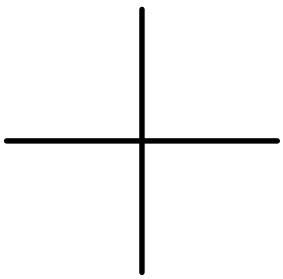
4.71



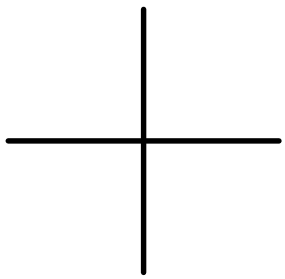
1.57



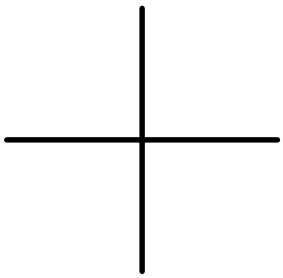
6.28



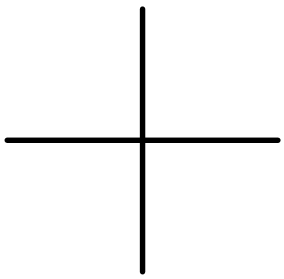
3.14



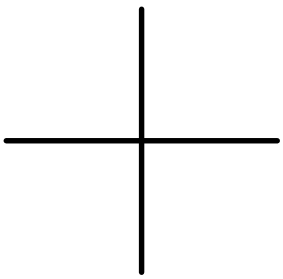
$\frac{3\pi}{2}$



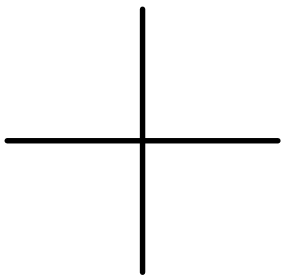
$\frac{\pi}{2}$



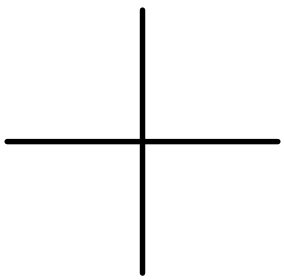
π



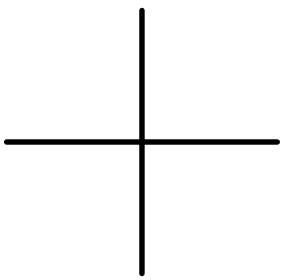
2π



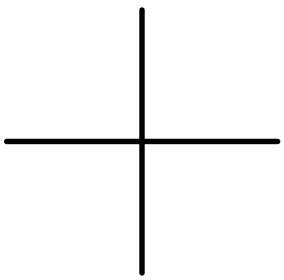
4.71



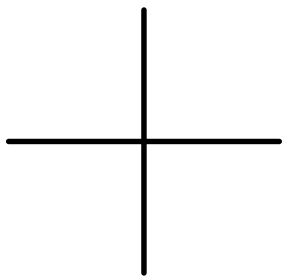
1.57



6.28



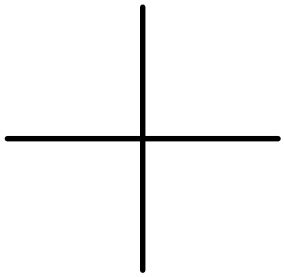
3.14



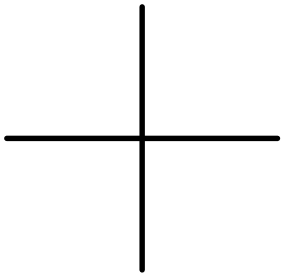
C12 - 4.4 - Solve $sin\theta = ?$ *HW*

Solve.

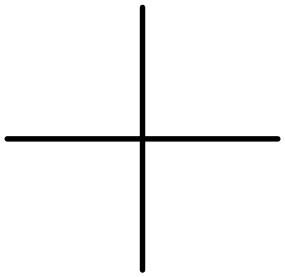
$sin2\pi =$



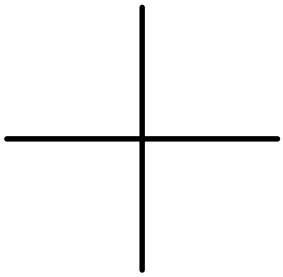
$cos\pi =$



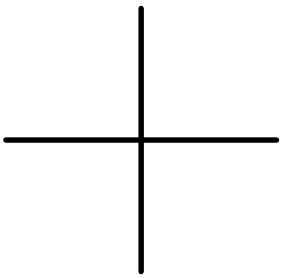
$tan\frac{3\pi}{2} =$



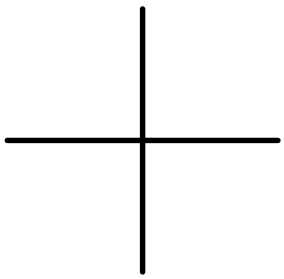
$sin\frac{\pi}{2} =$



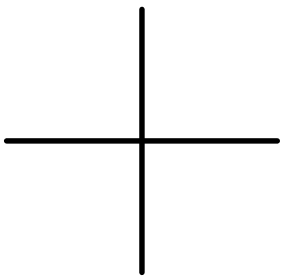
$cos4.71 =$



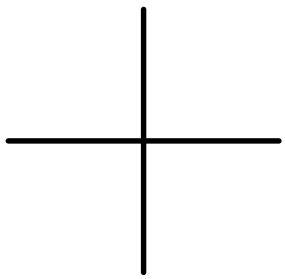
$csc1.57 =$



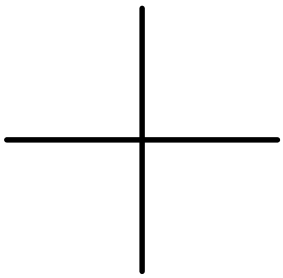
$tan6.28 =$



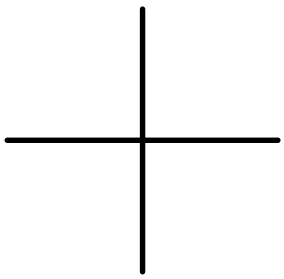
$sec3.14 =$



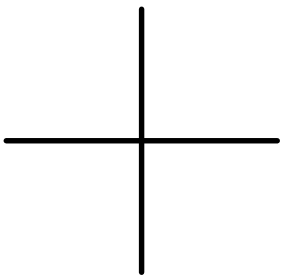
$csc\frac{3\pi}{2} =$



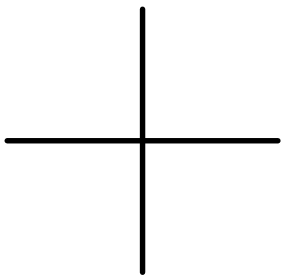
$cos\frac{\pi}{2} =$



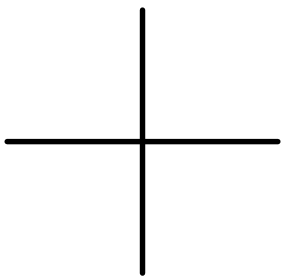
$cot\pi =$



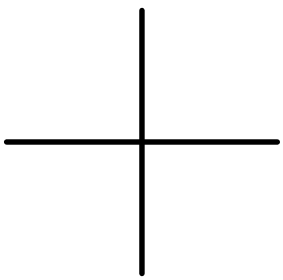
$cos2\pi =$



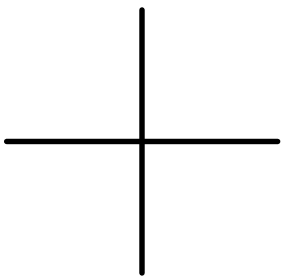
$sin4.71 =$



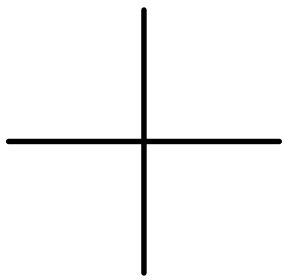
$cos1.57 =$



$tan6.28 =$



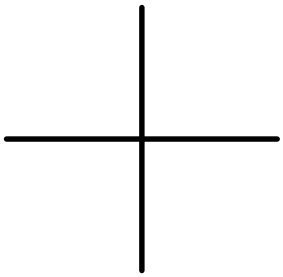
$cot3.14 =$



C12 - 4.4 - Point on Unit Circle HW

Find sinx, cox, and tanx for the following points and θ stp.

(0,1)



$sin\theta =$

$cos\theta =$

$tan\theta =$

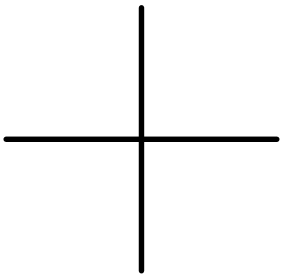
$csc\theta =$

$sec\theta =$

$cot\theta =$

$\theta_{stp} =$

(1,0)



$sin\theta =$

$cos\theta =$

$tan\theta =$

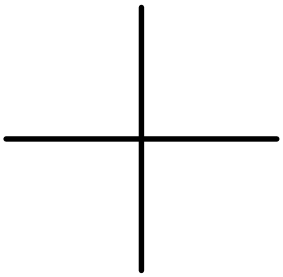
$csc\theta =$

$sec\theta =$

$cot\theta =$

$\theta_{stp} =$

$(0, -1)$



$sin\theta =$

$cos\theta =$

$tan\theta =$

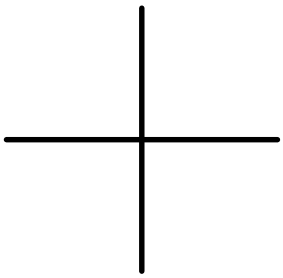
$csc\theta =$

$sec\theta =$

$cot\theta =$

$\theta_{stp} =$

$(-1,0)$



$sin\theta =$

$cos\theta =$

$tan\theta =$

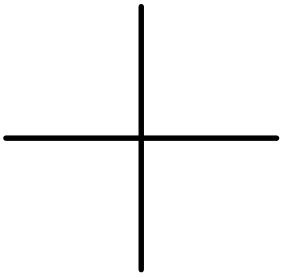
$csc\theta =$

$sec\theta =$

$cot\theta =$

$\theta_{stp} =$

(0,3)



$sin\theta =$

$cos\theta =$

$tan\theta =$

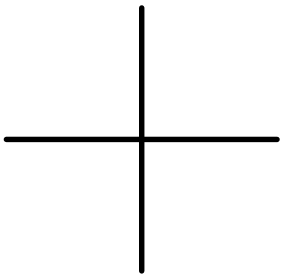
$csc\theta =$

$sec\theta =$

$cot\theta =$

$\theta_{stp} =$

$(-99,0)$



$sin\theta =$

$cos\theta =$

$tan\theta =$

$csc\theta =$

$sec\theta =$

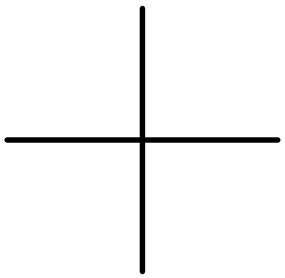
$cot\theta =$

$\theta_{stp} =$

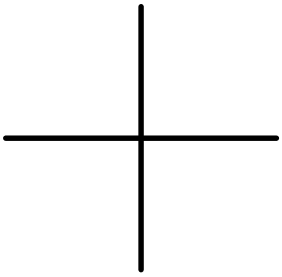
C12 - 4.4 - Unit Circle Trig Equations HW

$Solve\ for\ \theta, 0 \leq \theta < 2\pi$

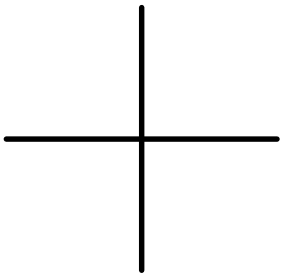
$sin\theta = 1$



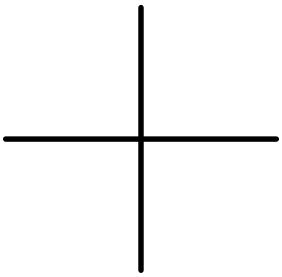
$cos\theta = 0$



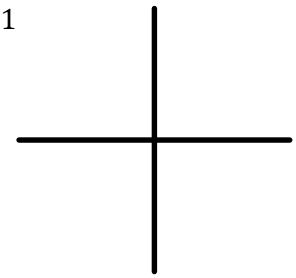
$csc\theta = 1$



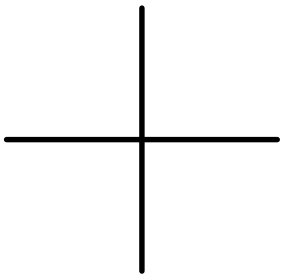
$cos\theta = -1$



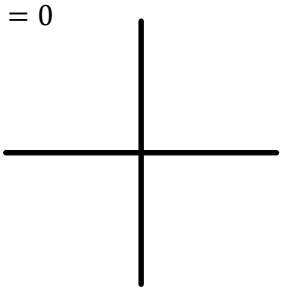
$sin\theta = -1$



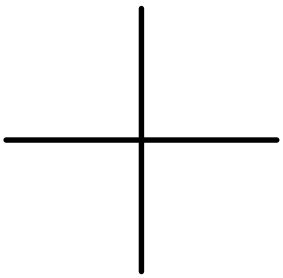
$cot\theta = und$



$\sin^2\theta - 1 = 0$



$sec\theta = 0$



C12 - 4.5 - $sin2\theta = \frac{1}{2}$ *ASTC Special Unit Decimal HW* $0 \leq \theta < 2\pi$

$\cos\left(\frac{1}{2}x\right) = 0$

$tan2\theta = 1$

$sin2\theta = -0.4$

$\cos(2\theta) = 1$

$\sin\left(\frac{1}{2}\theta\right) = \frac{1}{2}$

$tan4\theta = 0.6$

$tan2\theta = 1$

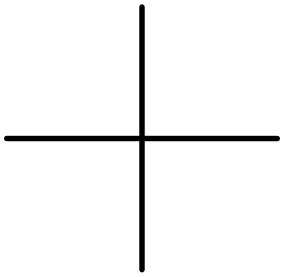
$\cos\left(\frac{1}{2}\theta\right) = -\frac{1}{\sqrt{2}}$

$sin3\theta = 0.6$

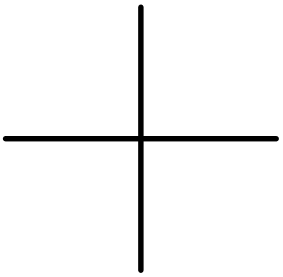
$sin2\theta = \theta$

C12 - 4.5 - Algebra Special Trig Decimal Equations HW

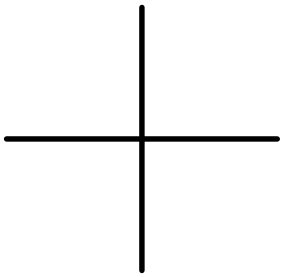
$Solve\ for\ x, 0 \leq x < 2\pi$



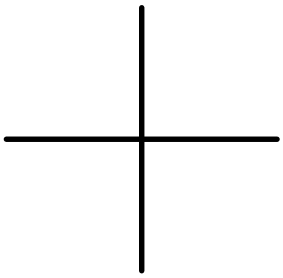
$2sinx = 1$



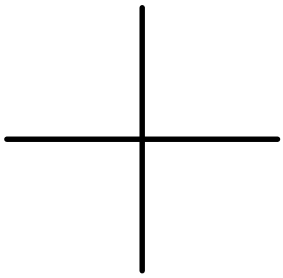
$\sqrt{2}cosx - 3 = -2$



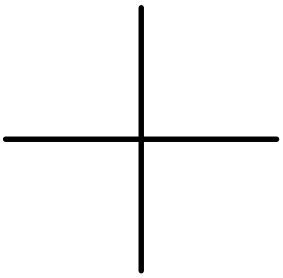
$-2sinx + 1 = 5$



$4\cos^2 x - 1 = 0$



$sinx - cosx = 0$



$-2\sin^2 x + 32 = 0$

$2tanx = 2$

$2cosx + 1 = 0$

$2cosx = -\sqrt{3}$

$\tan^2 x = 1$

$4\sin^2 x - 1 = 2$

$-\sqrt{2}sinx - 1 = 0$

$2\cos^2 x = 1$

$2sinx = -\sqrt{3}$

$tanx - 2 = -3$

C12 - 4.5 - Period *HW*

$0 \le \theta < 2\pi$

$\cos(x-2)=0$

$\sin(2x-2)=-\frac{1}{2}$

$tan2x = 0{,}2$

$\cos\left(\frac{\pi}{3}(x-2)\right)=\frac{1}{2}$

$\sin\left(\frac{\pi}{2}(x-1)\right)-1=1$

$\tan\left(\frac{\pi}{4}(x-6)\right)=5$

$2\cot(2\pi-1)=-3.8$

$\cos\left(\frac{\pi}{6}\left(x-\frac{\pi}{3}\right)\right)=0.2$

$2\tan\left(2\left(x-\frac{\pi}{2}\right)\right)+3=1$

$\cot(1.2x)=7$

C12 - 4.6 - Equations Algebra HW

$3sinx = 2 - sinx$

$1 - cosx = 4cosx$

$-3 + 2sinx = 7sinx - 1$

$\frac{tanx + 1}{tanx} = 2$

$2cosx = 4$

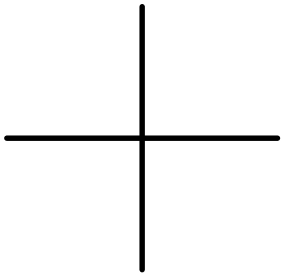
$7 - 3secx = 2$

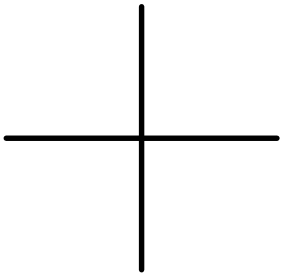
$cosx = secx$

C12 - 4.6 - Factoring Equations HW

Solve for $x, 0 \le x < 2\pi$, by factoring, then setting factors equal to zero and solve.

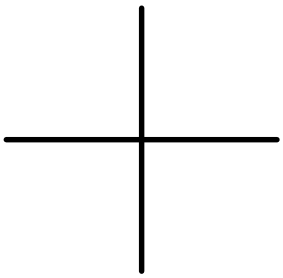
$\sin^2 x - sinx = 0$

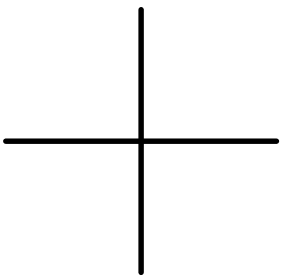




0,1

$2\sin^2 x + sinx - 1 = 0$





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

$\cos^2 x - cosx - 2 = 0$

$\sin^2 x + sinx - 2 = 0$

$2\cos^2 x - cosx - 1 = 0$

$\cos^2 x + cosx = 0$

$2\cos^2 x - 6cosx - 7 = 0$

$3\sin^2 x + 5sinx - 2 = 0$

$cosx + 1 - 2secx = 0$

$tanx = 2cotx - 1$

$2sinx = 3\tan^2 x$
Polynomial!

C12 - 4.7 - NPVs WS

$Denominator \neq 0$

Determine the non-permissible values of x in radians, for the following expressions.

$\boldsymbol{\frac{1}{sinx}}$

$\boldsymbol{\frac{sinx}{cosx}}$

$\boldsymbol{\frac{cosx}{1-sinx}}$

$\boldsymbol{cscx}$

$\frac{tanx}{sinx}$

$\frac{1}{cscx}$

$\frac{1}{cos\theta - \frac{1}{2}}$

$\frac{1}{tanx}$

$\frac{cscx}{tanx}$

$\frac{cotx}{tanx}$

$\frac{tanx}{x}$

$\frac{1}{\cos^2 x}$

$\frac{1}{1-\sin^2 x}$

$\frac{1}{tan\theta - 1}$

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

$\boldsymbol{\frac{cosx}{5}}$

$\boldsymbol{\frac{1}{sinx - cosx}}$

$\boldsymbol{\frac{1}{sinx - tanx}}$

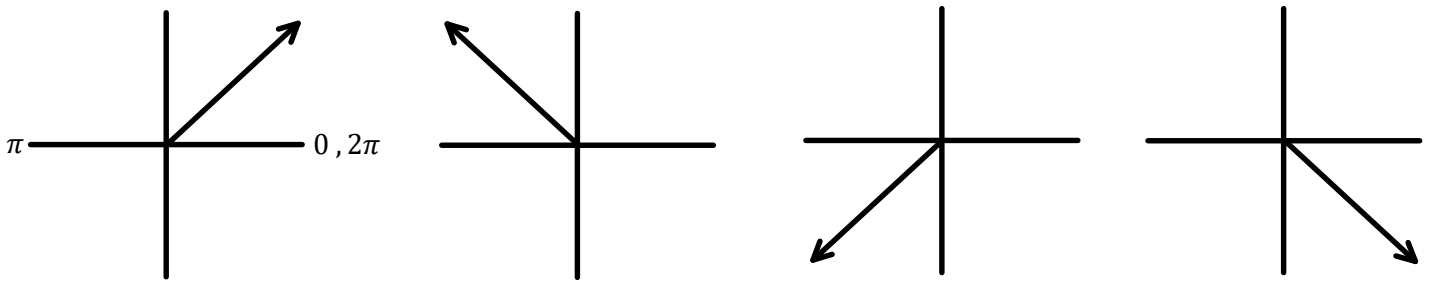
$\frac{1}{\cos^2 x + 1}$

$\frac{1}{\cos^2 x + cosx - 2}$

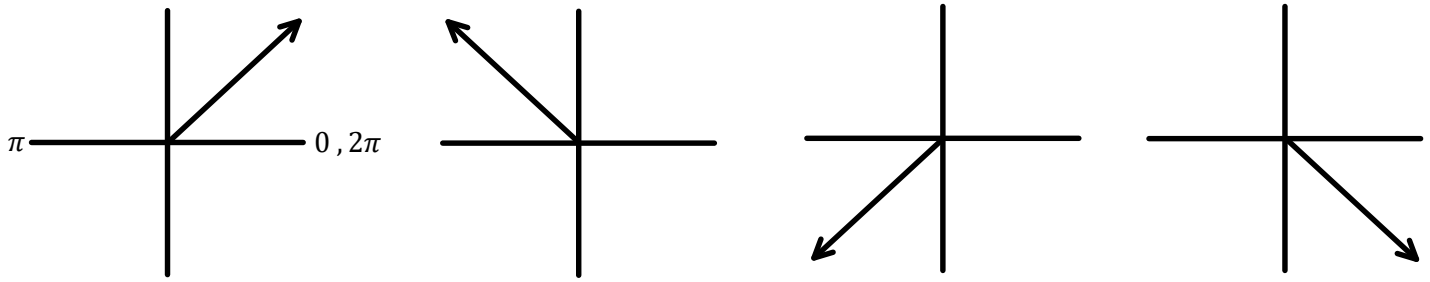
C12 - 4.7 - Domain Change HMK

Draw θ_{stp} Arrows within the Domain

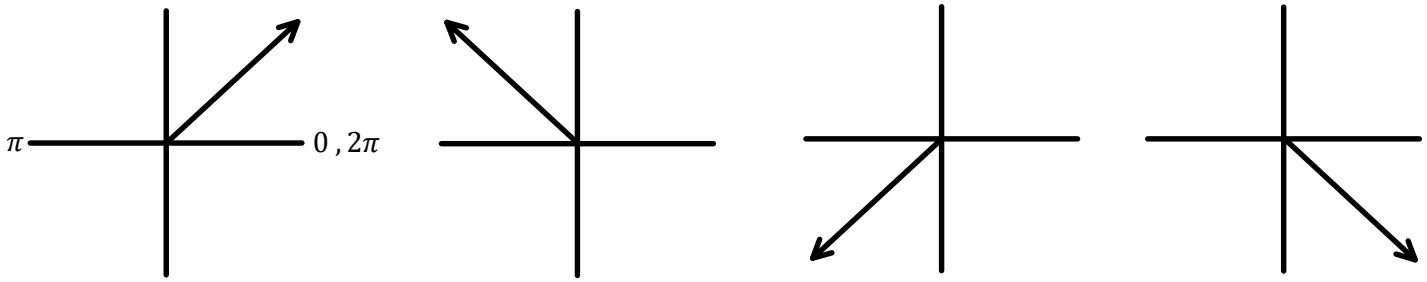
$0 \leq \theta < 2\pi$



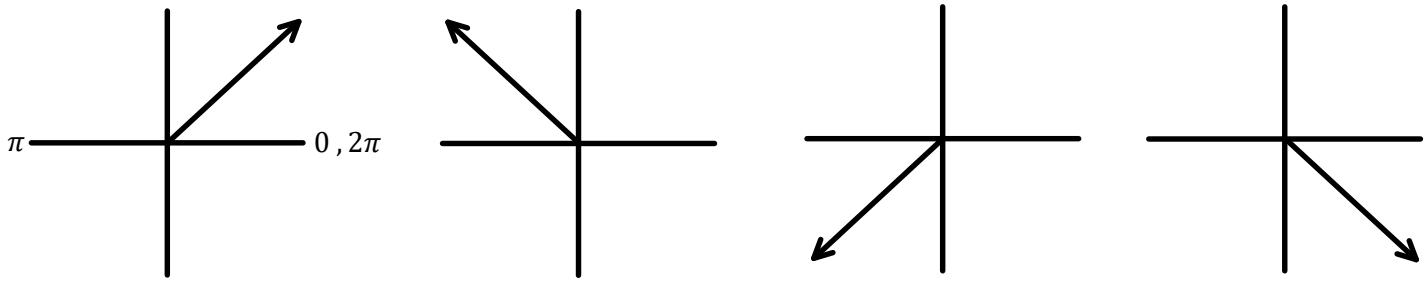
$-\pi \leq \theta < 0$



$-\frac{\pi}{2} \leq \theta < \frac{\pi}{2}$

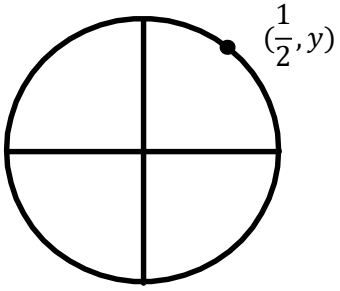


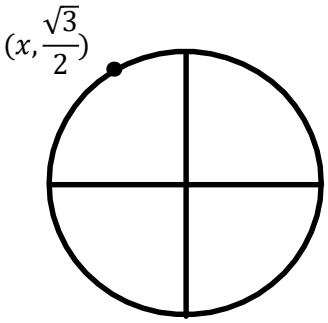
$0 \leq \theta < 4\pi$

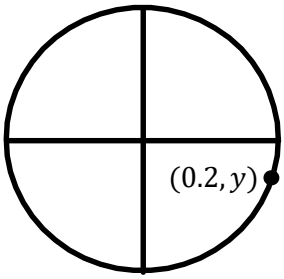


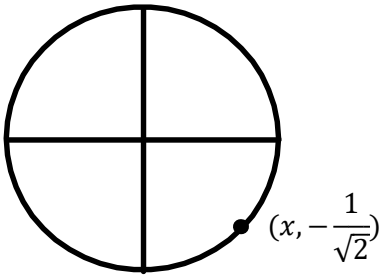
C12 - 4.8 - Solve (x,y) Unit Circle HMK

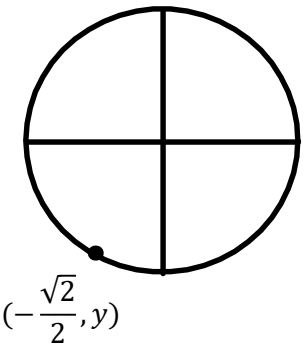
Find the missing value of the point on the unit circle

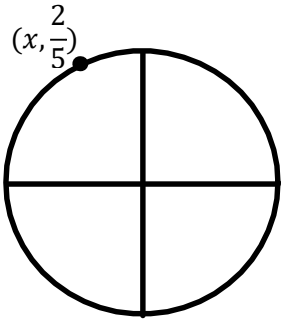






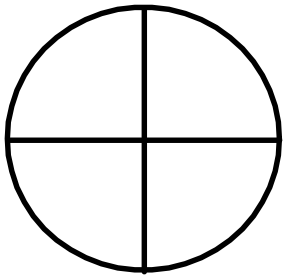




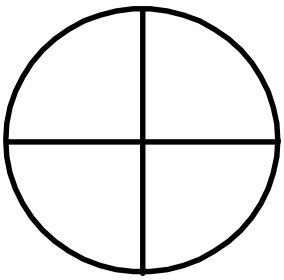


C12 - 4.8 - P(θ) = ? Solve (x,y) Unit Circle HMK

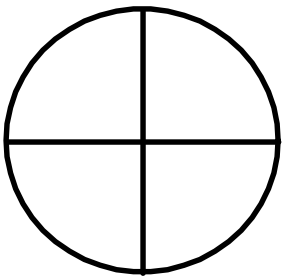
Solve the point on the unit circle



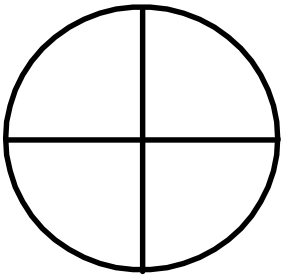
$p\left(\frac{\pi}{3}\right) =$



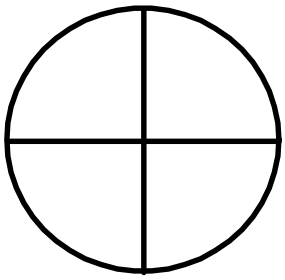
$p\left(\frac{\pi}{6}\right) =$



$p\left(\frac{\pi}{4}\right) =$



$p\left(\frac{4\pi}{3}\right) =$



$p\left(\frac{5\pi}{6}\right) =$

C12 - 4.9 - Arc Length, Central Angle HW

Don't forget to draw and label the circle!

What is the arc length of a circle with:

A radius of 1 and an angle of 45^0?

A radius of 5 and an angle of 60^0?

A radius of 4 and an angle of 180^0?

What is the arc length of a circle with:

A radius of 1 and an angle of $\frac{\pi}{4}$?

A radius of 5 and an angle of π?

A radius of 4 and an angle of $\frac{3\pi}{2}$?

What is the central in radians angle with:

A radius of 1 and an arc length of 1?

A radius of 3 and an arc length of 2?

A radius of 5 and an arc length of 12?

C12 - 4.9 - Radius, Sector Area HW

Don't forget to draw and label the circle!

What is the radius of a circle with:

An arc length of 3 and a central angle of $\frac{\pi}{3}$?

An arc length of 2 and a central angle of $\frac{\pi}{4}$?

An arc length of 5 and a central angle of π ?

What is the sector area of a circle with:

A radius of 1 and an arc length of 1?

A radius of 3 and an arc length of 2?

A radius of 5 and an arc length of 12?