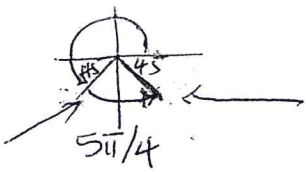
PreCalculus Practice Test

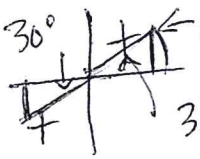
Determine two angles $(0 \le \theta < 2\pi)$ such that $\sin(\theta) = -\frac{\sqrt{2}}{2}$



$\frac{5\pi}{4}, \frac{7\pi}{4}$

Determine two angles $(0 \le \theta < 2\pi)$ such that $\cot(\theta) = \sqrt{3}$.

$\tan = \frac{1}{\sqrt{3}} = \frac{\frac{1}{2}}{\frac{\sqrt{3}}{2}}$ sin / cos



$\frac{\pi}{6}, \frac{7\pi}{6}$ $30°, 210°$

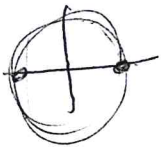
$\frac{\sqrt{3}}{2}, \frac{1}{2}$

$-\frac{\sqrt{3}}{2}, -\frac{1}{2}$

Determine two angles $(0 \le \theta < 2\pi)$ such that $\csc(\theta) = undefined$.

$\frac{1}{\sin\theta} = \frac{1}{0}$

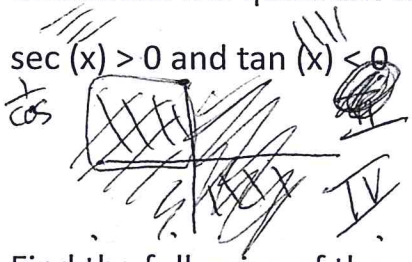
$\sin = 0$ at $0, \pi, 2\pi$



$0, \pi$

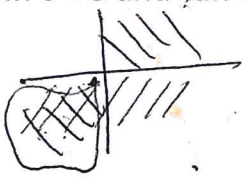
Determine the quadrant where

$\sec(x) > 0$ and $\tan(x) < 0$



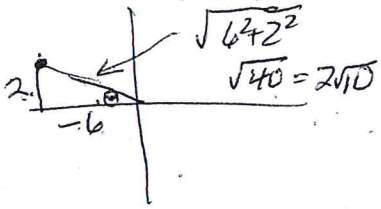
Find the quadrant of where

$\sin t < 0$ and $\tan t > 0$



Quad III

Find the following of the angle in standard position whose terminal side contains (-6, 2)



Sin(x)	$\frac{2}{2\sqrt{10}} = \frac{1}{\sqrt{10}} = \frac{\sqrt{10}}{10}$	Cot(x)	-3
Cos(x)	$\frac{-6}{2\sqrt{10}} = \frac{-3}{\sqrt{10}} = \frac{-3\sqrt{10}}{10}$	Csc(x)	$\sqrt{10}$
Tan(x)	$-\frac{2}{6} = -\frac{1}{3}$	Sec(x)	$-\frac{\sqrt{10}}{3}$

Describe the transformation of the graph of $f(x) = 5 - \frac{1}{2}\cos(4x + \frac{\pi}{3})$

$\frac{\frac{\pi}{3}}{4} = \frac{\pi}{3} \cdot \frac{1}{4} = \frac{\pi}{12}$

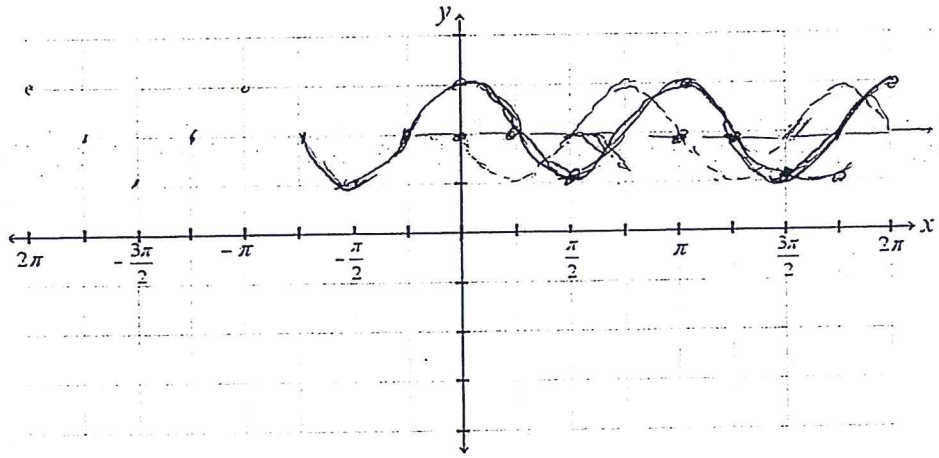
Amplitude:	Vertical shift:	Phase shift:	Period:
$\frac{1}{2}$	up 5	left $\frac{\pi}{12}$	$\frac{2\pi}{4} = \frac{\pi}{2}$

Describe the graph of $g(x) = \frac{3}{2}\cos(\frac{3}{4}(x - \frac{\pi}{4}))$.

Amplitude:	Vertical shift:	Phase shift:	Period:
$\frac{3}{2}$	none	$\frac{\pi}{4}$ right	$\frac{2\pi}{3/4} = 2\pi \cdot \frac{4}{3} = \frac{8\pi}{3}$

Sketch the graph of $h(x) = 2 - \sin(2x - \frac{\pi}{2})$

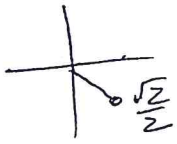
amp = 1
period = π
up 2
reflected
ph shift = $\frac{\frac{\pi}{2}}{2} = \frac{\pi}{4}$ right

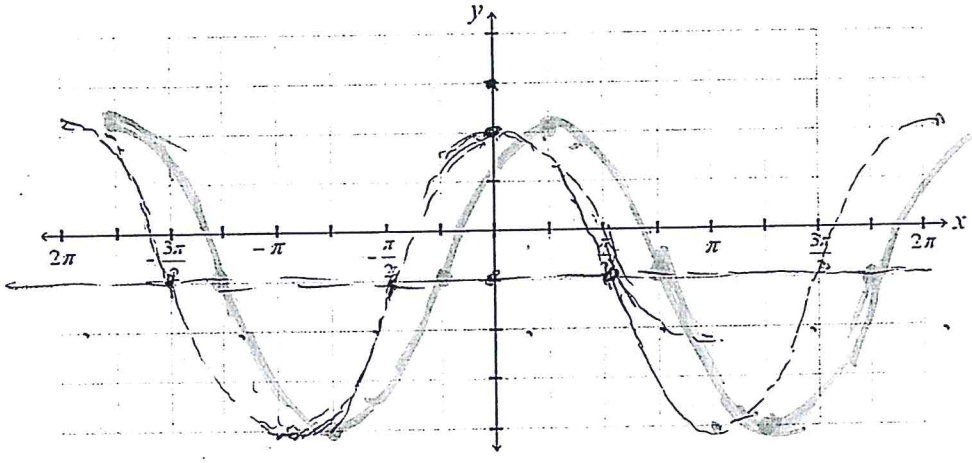


$\frac{\pi}{4}$ right

Sketch the graph of $j(x) = 3\cos\left(x - \frac{\pi}{4}\right) - 1$

amp = 3
down 1
period = 2π
$\frac{\pi}{4}$ right





$y = 3\cos(0 - \frac{\pi}{4}) + 1$

$3 \cdot \frac{\sqrt{2}}{2} - 1$

$(0, \frac{3\sqrt{2}}{2} - 1)$

$\frac{3\sqrt{2}}{2} \approx 2.1$

The amount of daylight follows a sinusoidal model. The fall equinox (Sept 23) is when there are 12 hours of daylight. On October 23, there will be 11 hours of daylight.

a) Write a function that models the hours of daylight as function of the month. You can start with September as month zero.

got 2.25 from finding hrs of daylight on 12/22 - 9.75

let 12 = midline
period = 12 months
sin

$\frac{2\pi}{12 \text{ months}} = \frac{\pi}{6} = b$

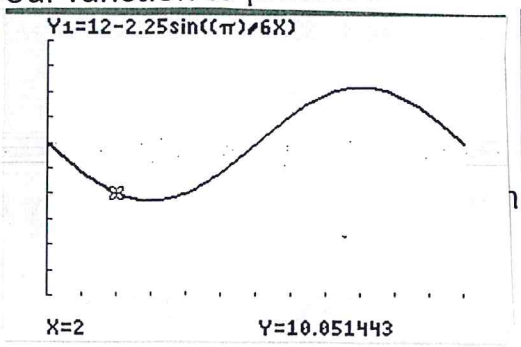
$y = \sin\frac{\pi}{6}$ starts at 12; goes down

$y = 12 + \sin\frac{\pi}{6}x$

2.25

b) Use your function to predict the amount of daylight hours on November 23.

$\frac{12}{-9.75}$
$2.25 \approx 10.05$ hrs
amplitude



WINDOW
Xmin=0
Xmax=12
Xscl=1
Ymin=6
Ymax=16
Yscl=1
Xres=1

Plot1 Plot2 Plot3
Y1=12-2.25sin($\frac{\pi}{6}$X)

c) Chec

$\frac{\pi}{6} = \frac{2\pi}{12} = \frac{\pi}{6}$
period = 12 months