

FRIDAY MAY 27, 2016 Lesson #18

Aim: How do we sketch the graph of  $y = \csc \theta$ ,  $y = \sec \theta$  and  $y = \cot x$ ?

Do Now:

- 1) Is the graph of  $y = \cos 2(x + \frac{\pi}{4})$  the same as the graph of  $y = \cos(2x + \frac{\pi}{4})$ . Justify your answer.
- 2) If  $\cos \theta = -\frac{3}{4}$  and  $\theta$  is in Q III find  $\tan \theta$ ,  $\sin \theta$

Answer:

1)  $y = \cos 2(x + \frac{\pi}{4})$  vs  $y = \cos(2x + \frac{\pi}{4})$

a = 1	1
b = 2	2
c = 0	0
d $\rightarrow$ phase shift $-\frac{\pi}{4}$	$y = \cos(2x + \frac{\pi}{4})$ $\frac{\pi}{2}$ $\frac{\pi}{2}$

different.  $y = \cos 2(x + \frac{\pi}{8})$   
phase shift  $-\frac{\pi}{8}$

2)  $\cos \theta = -\frac{3}{4}$   $\theta$  is in Q III

$\cos \theta = \frac{adj}{hyp} = \frac{-3}{4}$     $\sin \theta = \frac{opp}{hyp} = \frac{-\sqrt{7}}{4}$

$(3)^2 + x^2 = 4^2$     $\tan \theta = \frac{-\sqrt{7}}{-3} = \frac{\sqrt{7}}{3}$

$x = \pm \sqrt{7}$

I - Other trigonometric functions

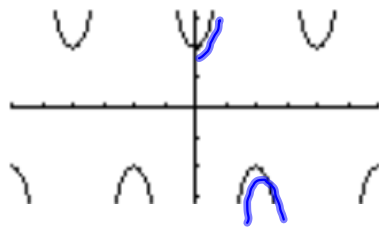
- 1) cotangent =  $\cot = \frac{1}{\tan \theta} = \frac{\cos \theta}{\sin \theta} = \frac{adj}{opp}$
- 2) secant =  $\sec = \frac{1}{\cos \theta} = \frac{hyp}{adj}$
- 3) cosecant =  $\csc = \frac{1}{\sin \theta} = \frac{hyp}{opp}$

ex from the Do Now

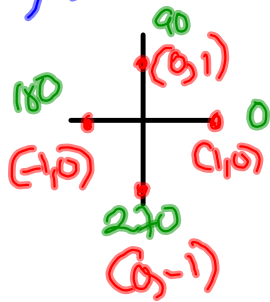
$\cot \theta = \frac{3}{\sqrt{7}}$     $\sec \theta = \frac{4}{3}$     $\csc \theta = \frac{4}{\sqrt{7}}$

$\tan \theta = \frac{\sqrt{7}}{3}$     $\cos \theta = -\frac{3}{4}$     $\sin \theta = -\frac{\sqrt{7}}{4}$

II -  $\psi = \sec \theta$  Let's Graph it.

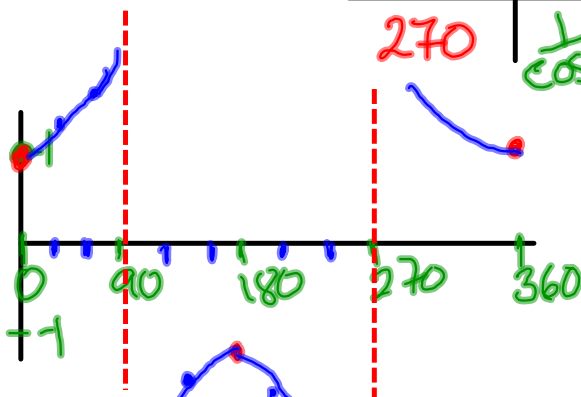


1) NO CALCULATOR



$$\psi = \sec \theta = \frac{1}{\cos \theta}$$

$\theta$	$\frac{1}{\cos \theta}$	$\psi$
0	$\frac{1}{\cos 0} = \frac{1}{1}$	1 ✓
90	$\frac{1}{\cos 90} = \frac{1}{0}$	ERROR ✓
180	$\frac{1}{\cos 180} = \frac{1}{-1}$	-1 ✓
270	$\frac{1}{\cos 270} = \frac{1}{0}$	ERROR



X	Y1
0	1
30	1.1547
60	2
90	ERROR

X	Y1
120	-2
150	-1.154
180	-1
210	-1.154

X	Y1
240	-2
270	ERROR
300	2
330	1.1547

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note: On your own complete  
 $\psi = \csc \theta$   
 $\psi = \cot \theta$