

TUESDAY MAY 31, 2016
 Lesson # 19

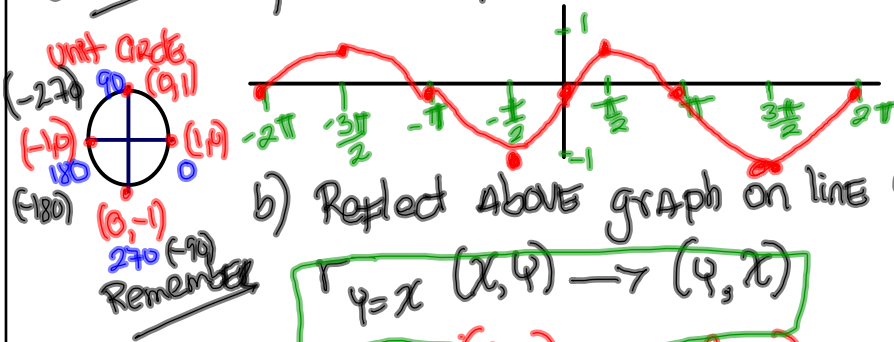
FOLDER
 • Tuesday June 7
 HW #13 - #20

Final Exam
 • Thursday June 2
 (based on test 1-6 &
 HW: 14, 15, 16, 17)

Project: Tuesday June 7
 (email)

Aim: How do we sketch the graph of the inverse of the sine, cosine and tangent functions?

Do Now 2: a) sketch $y = \sin x$ over $-2\pi \leq x \leq 2\pi$



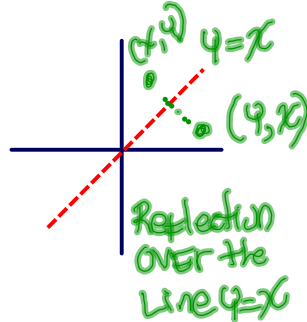
b) Reflect about graph on line $y=x$

$\Gamma_{y=x} (x, y) \rightarrow (y, x)$
 ex $(2, 1) \rightarrow (1, 2)$

Parent function
 (table)

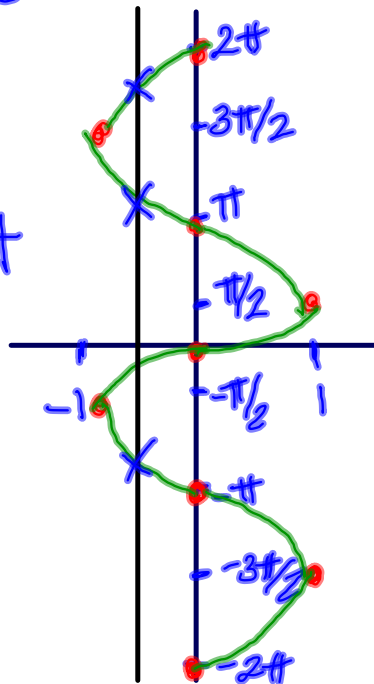
x	$y = \sin x$
-2π	0
$-3\pi/2$	1
$-\pi$	0
$-\pi/2$	-1
0	0
$\pi/2$	1
π	0
$3\pi/2$	-1
2π	0

Reflection $\Gamma_{y=x}$



$(0, -2\pi)$
$(1, -3\pi/2)$
$(0, -\pi)$
$(-1, -\pi/2)$
$(0, 0)$
$(1, \pi/2)$
$(0, \pi)$
$(-1, 3\pi/2)$
$(0, 2\pi)$

This is not
function
Why?
X CAN'T Repeat
(Failure
of the
vertical
line test)



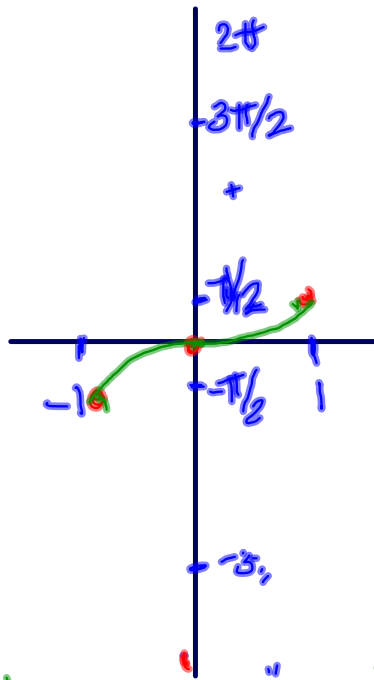
Parent function
 $y = \sin x$

The new function
 $y = \sin^{-1} x$

ex] $\psi = \sin 90 = 1$
 shift $\sin^{-1} 1 = 90$

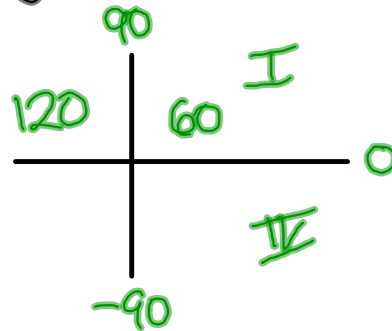
I- Inverse functions (-1)

a) sine



Domain: $-1 \leq x \leq 1$

range: $-\frac{\pi}{2} \leq y \leq \frac{\pi}{2}$

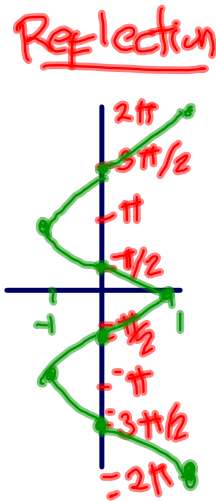
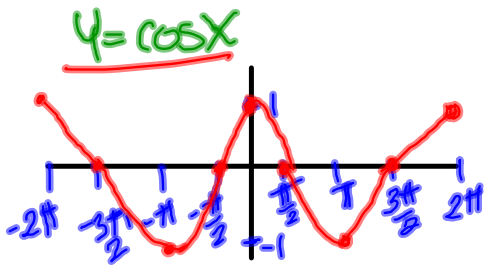


note: It becomes a function by restricting the range

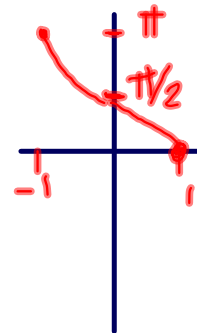
b) cosine

$y = \cos x$

PARENT (over $-2\pi \leq x \leq 2\pi$)
 reflection over $y=x$
 restrict the range to make it into a function.



Inverse
 $y = \cos^{-1} x$



note:

$y = \cos x$ (Parent)

$y = \frac{1}{\cos x} = \sec x$ (Reciprocal)

$y = \cos^{-1}(x)$ (Inverse)
 ↳ Arc cos x.

Domain:
 $-1 \leq x \leq 1$

Range:
 $0 \leq y \leq \pi$