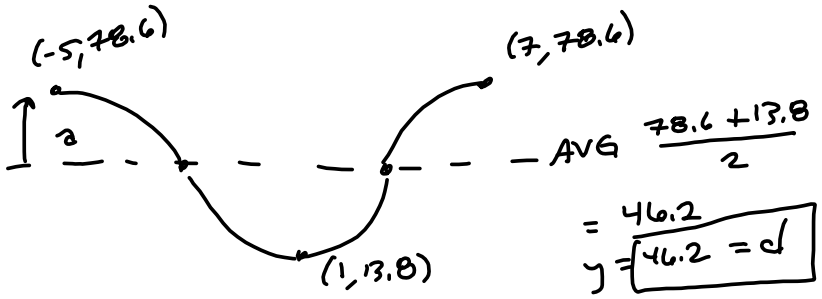
(1, 13.8)

(7, 78.6)

$f(x) = a\cos(b(x-c)) + d$



$\frac{78.6 + 13.8}{2}$

$= 46.2$

$y = 46.2 = d$

amp:

$\frac{78.6 - 13.8}{2}$

$= \frac{64.8}{2} = 32.4 = a$

Period = 24 hrs:

$bx = 2\pi$

$24b = 2\pi$

$b = \frac{2\pi}{24} = \frac{\pi}{12} = b$

START @ HIGH POINT:

$x = -5$ OR $x = 7 = c$

f(x) ... Nah. Use t = Months, starting w/ January corresponding to t = 1

$f(t) = 32.2\cos\left(\frac{\pi}{12}(x-7)\right) + 46.2$

$\approx 32.2\cos(.3(x-7)) + 46.2$

WebAssign might want

$32.2\cos(.3x - 2.1) + 46.2$

32.4 ←

DOH! 12 months in a year, Steve!

So, $32.2\cos\left(\frac{\pi}{6}(t-7)\right) + 46.2$

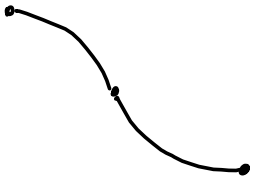
$\approx 32.2\cos(.5(t-7)) + 46.2$

32.4

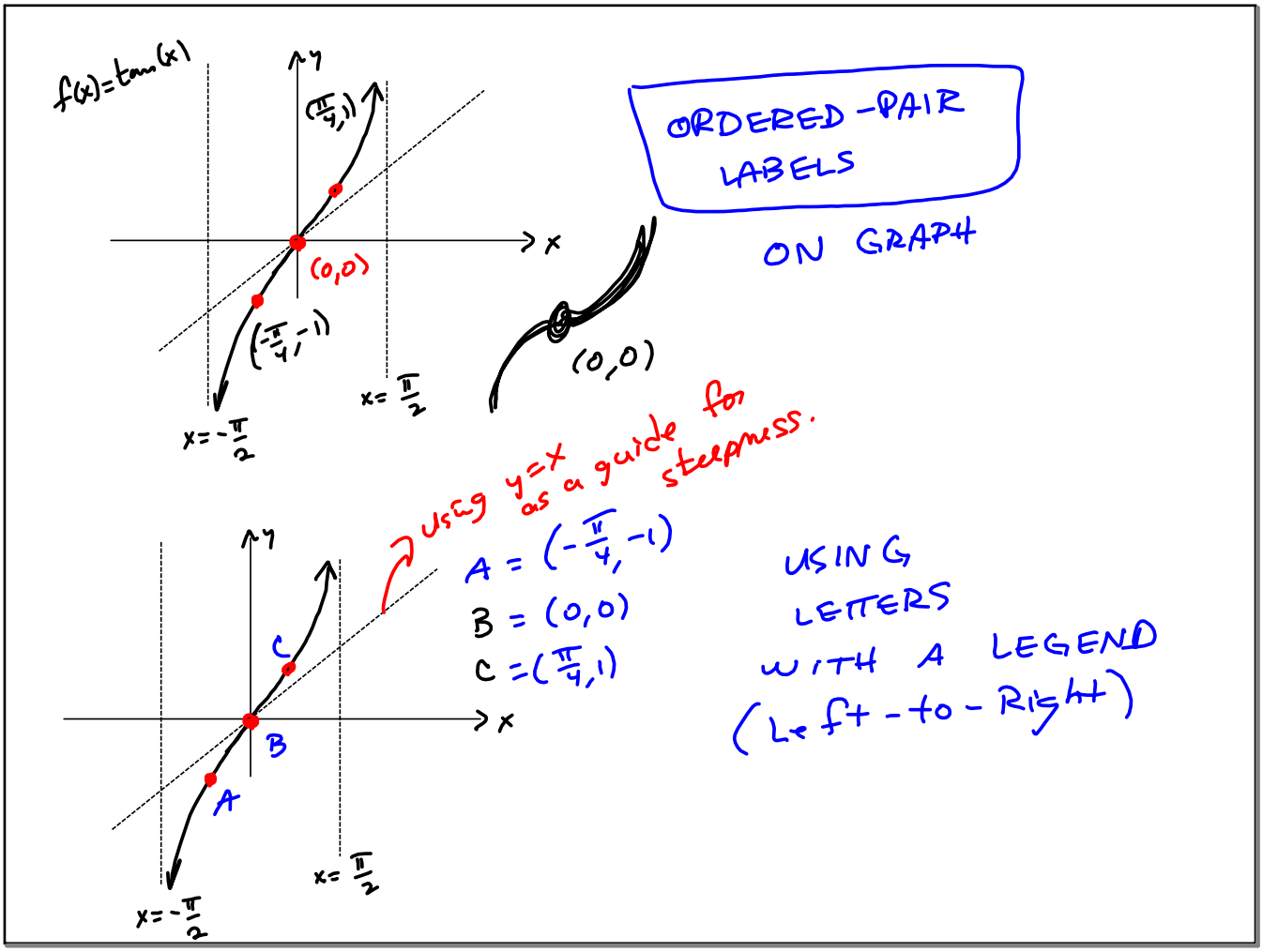
	92.40000000
Ans/2	46.20000000
π/12	.26179939
Ans*7	1.83259571

	.26179939
Ans*7	1.83259571
π/12*2	.52359878
Ans*7	3.66519143

WebAssign Answer:



They're flipping it, for no good reason


f(x)=tan(x)
y
x
(π/4, 1)
(0,0)
(-π/4, -1)
x= π/2
x= -π/2
ORDERED-PAIR LABELS ON GRAPH
(0,0)
Using y=x as a guide for steepness.
A = (-π/4, -1)
B = (0,0)
C = (π/4, 1)
USING LETTERS WITH A LEGEND (Left-to-Right)
y
x
C
B
A
x= π/2
x= -π/2

Did we do Inverse Trigs, like arcsine ($\sin^{-1}(x)$)

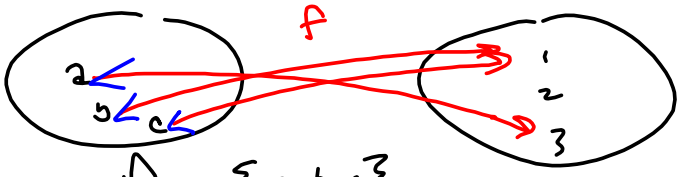
$\sin^{-1}(x)$

We kind of did, because I've already used "$\sin^{-1}$" key on my calculator.

$y = f(x)$ is a function means

For each x in a set (Domain), $y = f(x)$ is a unique number in another set (Range).

f is a function means f is a rule that assigns to each x in one set (Domain) to a unique y in another set (Range



Domain $= D = \{a, b, c\}$

Range $= R = \{1, 3\}$

Vertical Line Test

f is NOT 1-to-1.

f is 1-to-1 Means

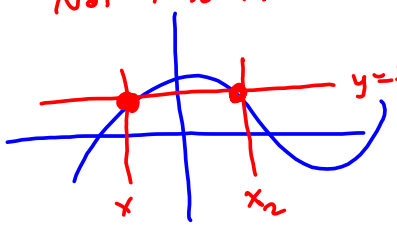
f is a function such that each $y \in R$ is assigned to exactly one x in the Domain

$f(x_1) = f(x_2) \Rightarrow x_1 = x_2$

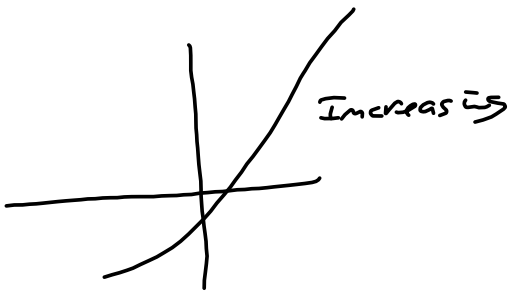
$x_1 \neq x_2 \Rightarrow f(x_1) \neq f(x_2)$

HORIZONTAL LINE TEST

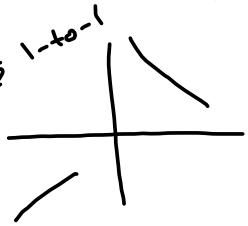
NOT 1-to-1;

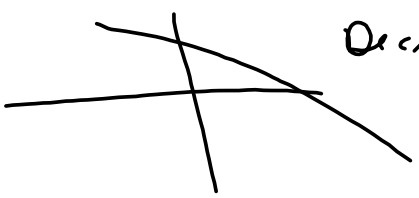


Flunks Horizontal Line Test.



Is 1-to-1





$y = f(x)$ $\sin(x) = \frac{\sqrt{3}}{2}$

$x = f^{-1}(y)$ $\sin^{-1}(\sin(x)) = \sin^{-1}\left(\frac{\sqrt{3}}{2}\right) = \frac{\pi}{3}$ OR 60°

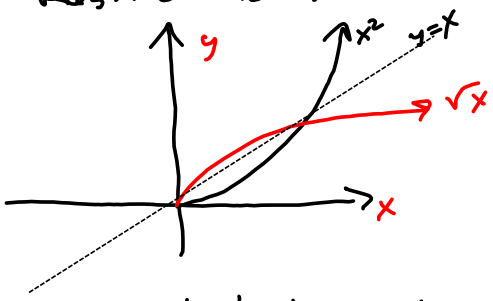
Now, these trig functions are not 1-to-1,
so, just like x^2, we restrict the domain.

$y = x^2 = y$ ⇒

$x = \pm\sqrt{y}$ is not an inverse function

Restrict to $x \geq 0$. $f(x) = x^2$ &

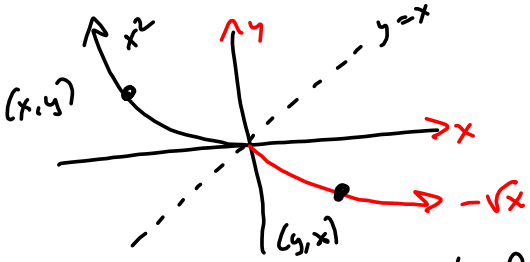
$f^{-1}(x) = +\sqrt{x}$



Restrict to $x \leq 0$:

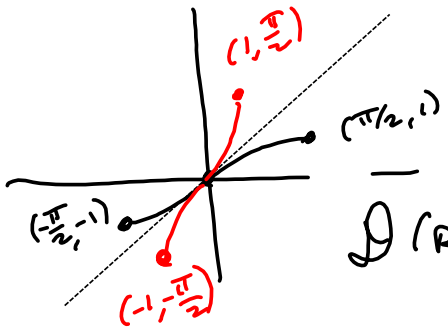
$f(x) = x^2$

$f^{-1}(x) = -\sqrt{x}$



$f^{-1}(x)$: Reflect $f(x)$ about $y=x$
Swap x & y!

Restricted sine:



sin(x) Restricted

$\mathcal{D}$ (Restricted Sine) $= [-\frac{\pi}{2}, \frac{\pi}{2}] = \mathcal{R}$ (arcsin(x))

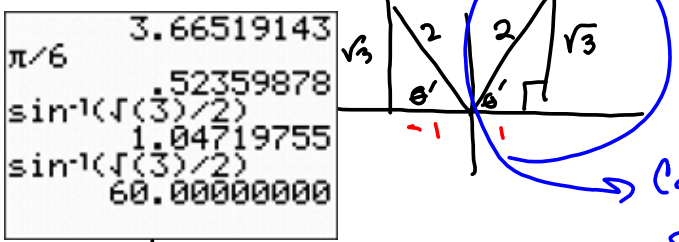
arcsin(x) = $\sin^{-1}(x)$.

$\mathcal{R}$ (Restricted) $= [-1, 1] = \mathcal{D}$ (arcsin(x))

PRACTICAL

Find all sol'ns $x \in [0, 2\pi]$ of $\sin(x) = \frac{\sqrt{3}}{2}$.

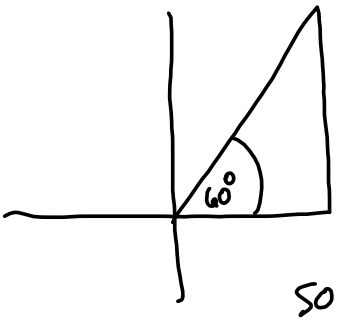
θ' = Reference Angle



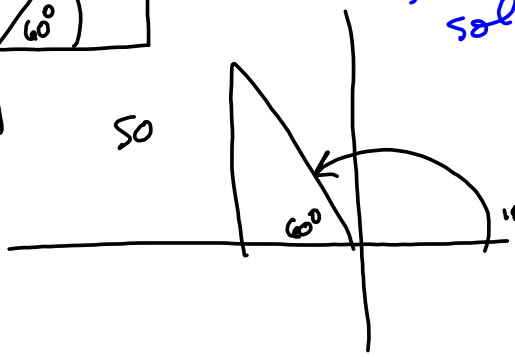
Calculator's $\sin^{-1}$ can only see this one.

YOU must use the reference angle & Logic to get the other soln.

That says



So



So, $x = 60°, 120°$

$180° - 60° = 120°$