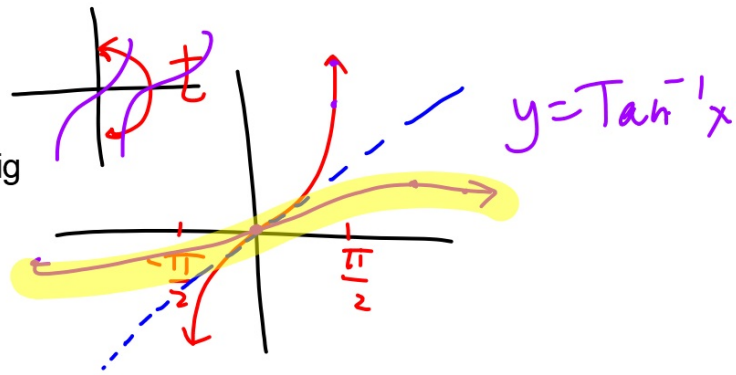
Trig 6.8

$y = x$

$x \leftrightarrow y$

$(3,5)\quad (5,3)$



Graph inverse trig functions
Find principal values of inverse trig functions

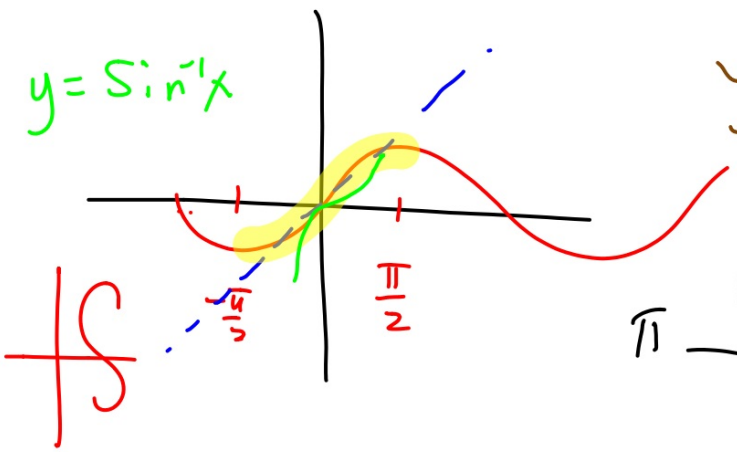
inverse

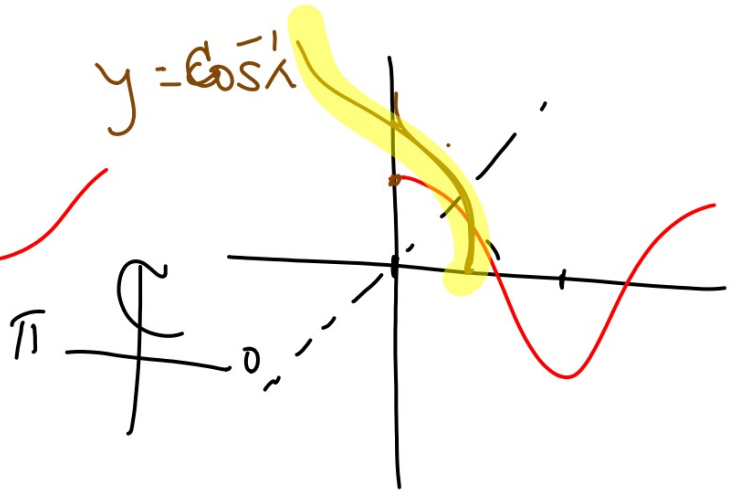
function

domain

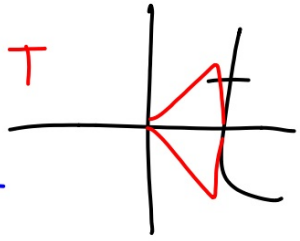
Arcsin inverse Sin, Sin^{-1}

whiteboards


y = Sin⁻¹x
1
1
π/2
-π/2

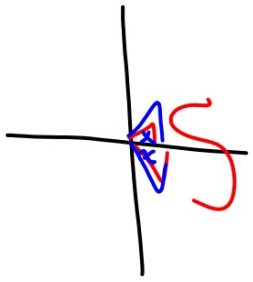

y = Cos⁻¹x
π
0

33. $\tan(\tan^{-1}x) = x$ T



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

37. $\cos^{-1}x = \frac{1}{\cos^{-1}x}$ F



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

$30 = \frac{1}{30}$


FoxTrot
by Bill Amend
135°?
-1
60°?
√3
90°?
UNDEFINED
SO WHAT ARE YOU NERDS UP TO?
JUST WORKING ON OUR TANS.
WANNA SWITCH THINGS AROUND AND TRY SOME ARCTANS?
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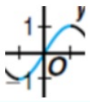
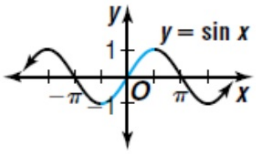
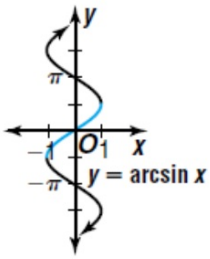
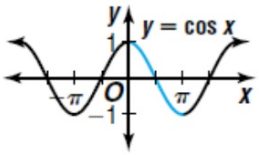
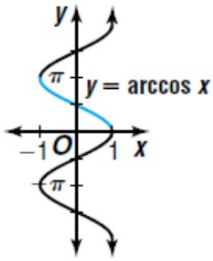
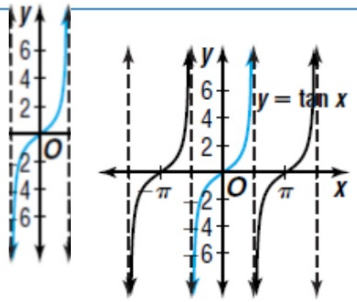
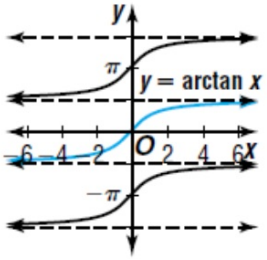
www.foxtrot.com twitter: @billamend

Reflection reverses orientation 

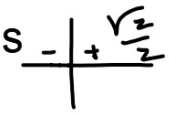
Relation	Ordered Pairs	Graph	Domain	Range
$y = \sin x$	$(x, \sin x)$		all real numbers	$-1 \leq y \leq 1$
$y = \arcsin x$	$(\sin x, x)$		$-1 \leq x \leq 1$	all real numbers

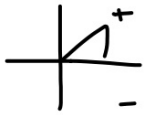
Relation	Ordered Pairs	Graph	Domain	Range
$y = \cos x$	$(x, \cos x)$		all real numbers	$-1 \leq y \leq 1$
$y = \arccos x$	$(\cos x, x)$		$-1 \leq x \leq 1$	all real numbers

$y = \tan x$	$(x, \tan x)$		all real numbers except $\frac{\pi}{2}n$, where n is an odd integer	all real numbers
$y = \arctan x$	$(\tan x, x)$		all real numbers	all real numbers except $\frac{\pi}{2}n$, where n is an odd integer

Arcsine Function	Given $y = \text{Sin } x$, the inverse Sine function is defined by the equation $y = \text{Sin}^{-1} x$ or $y = \text{Arcsin } x$.
Arccosine Function	Given $y = \text{Cos } x$, the inverse Cosine function is defined by the equation $y = \text{Cos}^{-1} x$ or $y = \text{Arccos } x$.
Arctangent Function	Given $y = \text{Tan } x$, the inverse Tangent function is defined by the equation $y = \text{Tan}^{-1} x$ or $y = \text{Arctan } x$.

Whiteboards



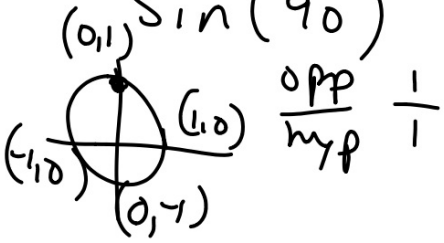


26. $\sin\left(2\,\mathrm{Cos}^{-1}\frac{\sqrt{2}}{2}\right) = 1$

$\frac{\pi}{4}$

$\sin(2 \cdot 45)$

$\sin(90)$



$\frac{opp}{hyp}$ $\frac{1}{1}$

27. $\cos(\mathrm{Tan}^{-1}\sqrt{3}) = \frac{1}{2}$

$\frac{\pi}{3}$

$\cos(60)$

28. $\cos\left(\text{Tan}^{-1}\,1 - \text{Sin}^{-1}\,1\right)$

$\cos\left(\frac{\pi}{4} - \frac{\pi}{2}\right)$

$\cos\left(45 - 90\right)$

$\cos(-45) = \frac{\sqrt{2}}{2}$

29. $\cos\left(\text{Cos}^{-1}\,0 + \text{Sin}^{-1}\,\frac{1}{2}\right)$

$\cos\left(\frac{\pi}{2} + \frac{\pi}{6}\right)$

$\cos\left(90 + 30\right)$

$\cos(120) = -\frac{1}{2}$

WB 6.8

1–9