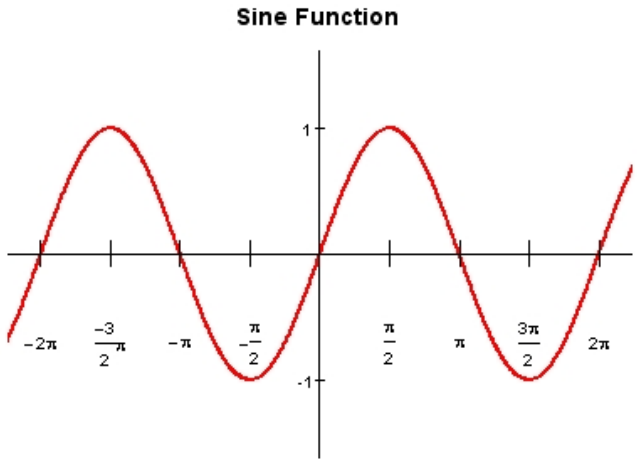
4.7 – Inverse Trig Functions (Day 1)



$y = \sin(x)$ IS a function

How do you know?

The INVERSE of $y = \sin(x)$ is NOT a function

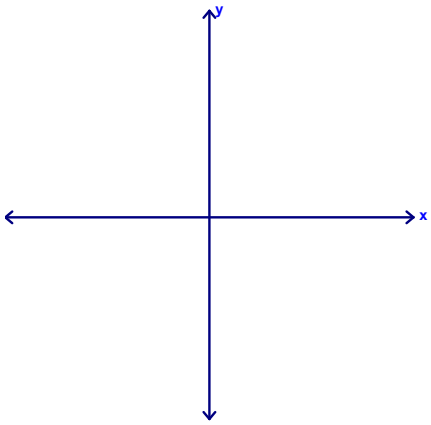
How do you know?

Even though the inverse of $y = \sin(x)$ is not a function, we study the inverse anyway, but only look at a small portion of the graph.

We restrict the domain to _____

On this interval…

1) y = sin(x) is increasing or decreasing? _____

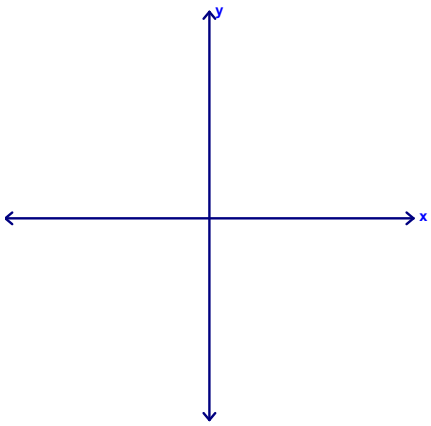


2) What is the domain? _____

3) What is the range? _____

So when we graph the inverse function,

1) will it be increasing or decreasing? _____



2) What is the domain? _____

3)
What is the range? _____

4.7 – Inverse Trig Functions (Day 1)

We use two types of notation for inverse functions:

y = _____ or y = _____

The idea behind the inverse problems is that they are GIVING you the value of the function, and you are trying to find the angle measure
(in degrees or radians)

Example 1) Find the EXACT value (you are looking for ANGLE measures)
(hint: it may help to draw a right triangle)

a) $\sin^{-1}\left(\frac{1}{2}\right)$

b) $\arcsin\left(\frac{-\sqrt{3}}{2}\right)$

c) $\sin^{-1}\left(\frac{\sqrt{2}}{2}\right)$

d) $\arcsin(-2)$

e) $\sin^{-1}\left(\frac{-1}{2}\right)$

f) $\arcsin(0)$

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

h) $\arcsin(-1)$

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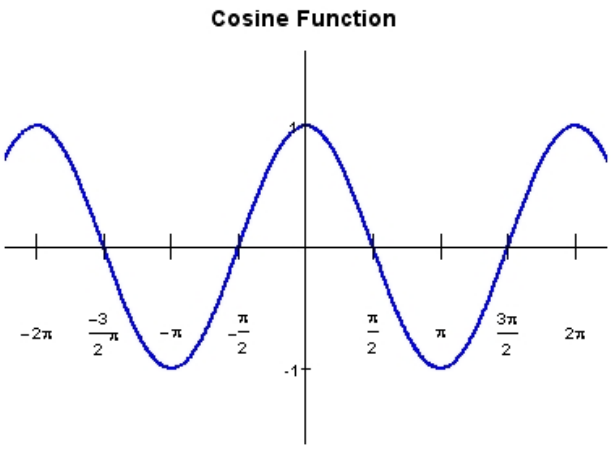

Domain: _____

Range: _____

So for the inverse,

domain: _____ range: _____

Example 2) Find the exact value

a) $\arccos\left(\frac{\sqrt{3}}{2}\right)$

b) $\cos^{-1}\left(\frac{\sqrt{2}}{2}\right)$

c) $\arccos(1)$

d) $\cos^{-1}(0)$

e) $\cos^{-1}\left(\frac{-1}{2}\right)$

f) $\arccos(-1)$

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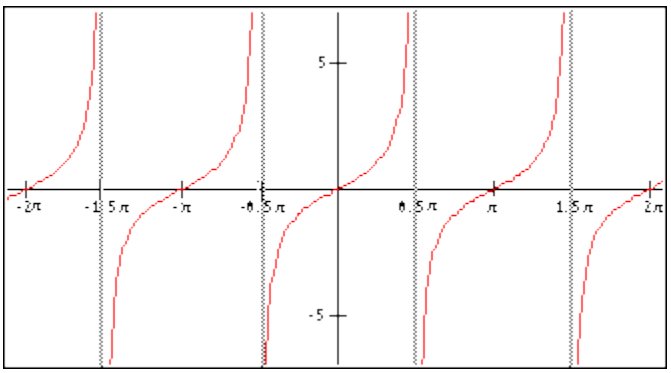
Tangent Function



Domain: _____

Range: _____

So for the inverse,

domain: _____ range: _____

Example 3) Find the exact value

a) arctan(0)

b) $\tan^{-1}(\sqrt{3})$

c) arctan(−1)

d) $\tan^{-1}\left(\frac{\sqrt{3}}{3}\right)$

e) arctan(1)

f) $\tan^{-1}\left(\frac{-\sqrt{3}}{3}\right)$

Homework for Day 1: p.349 # 1-16