Problem : 1

The arccosine function [F1 : arccos(x)]

Description

The arccosine function is the inverse of the cosine function. It is most useful when trying to find the angle measure when two sides of a triangle are known.

Arccosine indicates the angle whose cosine is x. The arccosine of x is defined as the inverse cosine function of x when -1 $\leq$ x $\leq$ 1.

When the cosine of y is equal to x: cos y = x. Then the arccosine of x is equal to the inverse cosine function of x, which is equal to y: arccos x = cos-1 x = y.

The domain of arccos is -1 $\leq$ x $\leq$ 1.

The range of arccos is 0 $\leq$ y $\leq \pi$.

Graph of arccosine

The curve in the graph is the arccosine function.Notice that for any x between 1 and +1 it returns a single value between 0 and + radiance.

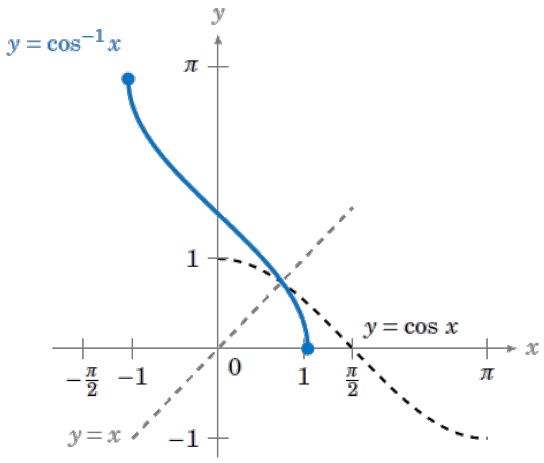

Figure 1: The curve y = arccos x

Properties of arccosine

For the arccosine function to be a true inverse function of the sine function, the following statement must be true: cos (arccos (x)) = x and arccos (cos (x)) = x

The arccosine function is a reflection of the cosine function about the line y = x.

The function arccosine is defined on the interval [-1,1] and are continuous on the open interval (-1,1).

Application of function

Arccosine function are unique function and useful in finding remaining two angles of right triangle.

References

https://en.wikipedia.org/wiki/Inverse_trigonometric_functions

https://courses.lumenlearning.com/boundless-algebra/chapter/trigonometric-functions-and-the-unit-circle/