**Function Definition and Glossary:**

is an inverse trigonometric function. Specifically, the arccosine of x is defined as the inverse cosine function of x when domain is -1 ≤ x ≤ 1.[3]

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:

= cos-1*x* = *y*

Since none of the six trigonometric functions are one-to-one, they must be restricted in order to have inverse functions. Therefore, the ranges of the inverse functions are proper subsets of the domains of the original functions.[1]

For example, using *function* in the sense of multivalued functions, just as the square root function *y* =  could be defined from *y*2 = *x*, the function *y* = is defined so that cos(*y*) = *x*. For a given real number *x*, with −1 ≤ *x* ≤ 1, there are multiple (in fact, countably infinite) numbers *y* such that cos(*y*) = *x*; for example, cos (0) = 1, but also sin(π) = -1, cos(2π) =1 etc. [2] When only one value is desired, the function may be restricted to its principal branch. With this restriction, for each *x* in the domain, the will evaluate only to a single value, called its principal value. These properties apply to all the inverse trigonometric functions.[3]

Its expression as indefinite integral:[1]

Chart, line chart

Description automatically generated

Figure 1[3]

**Glossary**

**trigonometric functions:**

In mathematics, the trigonometric functions (also called circular functions, angle functions or goniometric functions) are real functions which relate an angle of a right-angled triangle to ratios of two side lengths. They are widely used in all sciences that are related to geometry, such as navigation, solid mechanics, celestial mechanics, geodesy, and many others. [1]

**One to One:**

A function is one to one if no two elements in the domain of f (x)correspondent to the same element in the range of f(x). [4]

**Indefinite integral:**

An indefinite integral is a function that takes the antiderivative f another function. It is visually represented as an integral symbol, a function, and then a dx at the end [4]

References

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