Trigonometric inverse domain

In any right-angle triangle we have three angles

To get based on one base rule [Angel (B) + Angel (C) = 90]

If we used the trigonometric inverse functions

Under one condition that -1<= T < =1 i.e.

Because of this restriction to have all values in between this interval

We must be bigger than -1 by some number so we are going to write it as

Also, we must be less than 1 by some number so we are going to write it as

In order to have T <= 1 and T >= -1 THEN T` must be between

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If we used T` in both sides, we get 90 degrees

But if generalized this equation to have different values for both sin and cos we get any degrees between

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If we used this theta in our complex number

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For some value T1 and T2 will give us complex number with real part = 0.5 for any value as this example

We set the real part using the inverse function of sin and cos and took only one variable w.

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Now we only need to have one general formula for theta.

As there is already difference in phase between sin and cos = 0.5

We can rewrite the complex function as

*At S = 0.5*

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If we reverse his by multiply by x

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Multiply by which is the ratio between the current odd number and the previous odd number.

For any value for X, Y= 0.5

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Which means we have linear function with slope = 1 for any function

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Therefor, going back to our general formula

There will be for odd numbers some value for T1 and T2 that is complex number with only Real value = 0.5.

|  |  |
| --- | --- |
| W = 1 |  |
| W =2 |  |
| W =3 |  |
| W =4 |  |
| W = 5 |  |
| W =6 |  |
| W=7 |  |
| W=8 |  |
| W=9 |  |

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Therefor at S = 0.5

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And in general

At c = 2

At c = -2

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For any w > 0.5 and w not equal 2

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1. Addition for the inverse functions

Linear function with slope = 0 (horizontal line) with length =2

At y = pi/2 = 90

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1. Difference between the inverse functions

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1. At X = X + 0.5

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