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# Rusho's Conjecture on Visualising Complex Arithmetic In Real Analysis

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Dedicated to

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My Father Dr.prof. Mohammad Ali

My Mother And Teacher of all time Dr. Ruma Ali

My 2'nd Father :Engr.Ali Ahmed Jewel

My 2'nd mother and teacher of my early age Surraya Ahmed

## Abstract

**W**E ALL KNOW COMPLEX NUMBER OR IMAGINARY NUMBER CAN'T BE SEEN IN REAL ANALYSIS . . . MATHEMATICIANS MADE ANOTHER FIELD FOR THIS NAMED COMPLEX ANALYSIS . BUT IN THIS PAPER I AM GOING TO RELATE COMPLEX NUMBER WITH THE REAL . AT LEAST WE CAN TAKE SOME FEEL FROM HERE . WE WILL USE NOTHING BUT SIMPLE KNOWN CONCEPT FORM HIGH SCHOOL MATHEMATICS AND WILL IMPLY IT IN A BEAUTIFUL WAY . FROM HEADLINE IT CAN BE SEEN SOMETHING BORING OR TOUGH BUT IF WE DIVE IN TO IT IT WILL BE UNDERSTOOD BY SCHOOL STUDENT'S ALSO . ANALYSIS IS THE BRANCH OF MATHEMATICS DEALING WITH CONTINUOUS FUNCTIONS, LIMITS, AND RELATED THEORIES, SUCH AS DIFFERENTIATION, INTEGRATION, MEASURE, INFINITE SEQUENCES, SERIES, AND ANALYTIC FUNCTIONS. THESE THEORIES ARE USUALLY STUDIED IN THE CONTEXT OF REAL AND COMPLEX NUMBERS AND FUNCTIONS. . BUT FOR THIS PAPER ONE CAN SHOULD BE KNOWN SOME BASIC TOOL LIKE LOGARITHMIC FUNCTION , EULER \_LAGRANGE BEAUTIFUL MATH EQUATION , NATURAL LOG SERIES ETC AND BEAT MORE FREE TIME WITH ENTHUSIASTIC MIND

Keywords : logarithmic function , Euler \_lagrange Beautiful math equation , natural log series

# Introduction

We all know that :

$$e^{i\pi} + 1 = 0$$

Or

$$e^{i\pi} = -1$$

Taking Logarithm form both side :

$$\ln(e^{i * \pi}) = \ln(-1)$$

$$\text{Or } i * \pi = \ln(-1)$$

From ln x series we know that :-

$$\ln(x) = x - x^2/2 + x^3/3 - x^4/4 + x^5/5 - x^7/7 + x^9/9 - \dots + \dots\dots$$

Now implementing x=-1 we find =>

$$\ln(-1) = -1 - 1/2 - 1/3 - 1/4 - 1/5 + 1/7 - 1/9 - \dots - \dots$$

Now  $\ln(-1) = i * \pi$

$$i\pi = -1 - 1/2 - 1/3 - 1/4 - 1/5 + 1/7 - 1/9 - \dots - \dots$$

Then

$$i = (-1 - 1/2 - 1/3 - 1/5 + 1/7 - \dots - \dots) / \pi$$

From this equation we can see that Real infinite series divided by  $\pi$  is a complex number .  
This is The beauty in Math . We can also see some 3D Graph using Math

## Reference

Complex Analysis Book By Hafizur Rahman

Vector Rotation field By Art of problem solving

Mathway gar[hing calculations with Complex number

An introduction to complex Algorithm