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* Give a brief description, not exceeding one page, of your number, including the charac-teristics that make it unique.

Function : Natural logarithm of 2 i.e. lne2

De nitions :

Irrational Numbers - are the numbers that cannot be represented as ratio or a fraction.

Natural Logarithm - The natural logarithm of a number x is nothing but log to the base e of x. Here e has a approximate value of 2.718.

logex can be written as ln x

ln is called the natural log. The project is based on the natural logrithm of 2 ie. lne2 .

The value of lne2 0:69314718056 and it is an irrational number i.e cannot be expressed in fractional form.

The proof of lne2 being irrational goes something like :

Let suppose, lne2 is rational i.e. there exist a x,y integers > 0 and they can represent the natural log of 2.

Therefore it can be said :

lne2 = x=y

Applying exponential to both LHS and RHS , we get:

elne2 = ex=y

2 = ex=y

2y = ex

Since we know e is a transcendental number and from the theorm mentioned the famous book - "Proofs from the book" [1],Page 45, er , where r is rational number not equal 0 , is irrational we can say that lne2 is also an irrational number i.e. cannot be denoted as ratio of two integers with value > 0. The understanding of the proof was gathered from the website [2] - concept explained by Richard Morris, Maths tutor, doctorate in mathematics/computer science.

Reference

1. Aigner, Martin, and Gunter M. Ziegler. Proofs from THE BOOK. Fourth

ed.

1. \How Do I Prove ln2 Is Irrational?" Quora, www.quora.com/How-do-I-prove-ln2-is-irrational.

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