N6: Liouville Constant (c)

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1 Introduction

Liouville constant is also well known by Liouville number and it can be defined by:

$$c = \sum_{n=0}^{\infty} 10^{-n!} = \sum_{n=0}^{\infty} \frac{1}{10^{n!}} \tag{1}$$

$$c = \frac{1}{10^1} + \frac{1}{10^2} + \frac{1}{10^6} + \frac{1}{10^{24}} + ... \tag{2}$$

$$c = 0.11000100000000000000000001000 \tag{3}$$

2 Characteristics of Liouville Constant

Liouville Constant was created in 1844 by Joseph Liouville

Liouville constant is the first transcendental number to be proven.

Transcendental number is a number that is not a root of any nonzero integer polynomial

Liouville constant is unique beacuse of its decimal fraction as it is a series of 1s and 0s. ones are in each decimal place corresponding to n!, and zeros everywhere else.[1]

References

[1] *Liouville's Constant. (n.d.). Retrieved from http://mathworld.wolfram.com/LiouvillesConstant.html.*