TITLE: IRRATIONALITY OF THE NUMBERS $(\pi \pm e)$

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1.- INTRODUCTION.

The aim of this paper is to demostrate the irrationality of the numbers $(\pi \pm e)$, firts showing that at leats one of then is irrational, and then, by the metod of reductio ad absurdum, that the other is also irrational.

2.- PROOF

Suppose that $(\pi \pm e)$are both rational, i.e. there are integers (a, b, c, d) such that:

$\pi + e = \frac{a}{b}$

$\pi - e = \frac{c}{d}$.

Adding or substracting this two equations shows that both π and e are rational, wich is false.

Therefore, at least one of the two numbers $(\pi \pm e)$ be irrational.

A) Let $(\pi + e)$be rational and let $(\pi - e)$be irrational.

a) $\pi + e = \frac{a}{b}$

b) $\pi - e = i$

Let $\gamma(k)$be the infinite final decimal digits of a number k, starting at any decimal place as far from the integer part of k as desired.

Multplying equations a) and b) by b gives:

a') $b\pi + be = a \Longrightarrow \gamma(b\pi) + \gamma(be) = 0$

b')$b\pi - be = bi \Longrightarrow \gamma(b\pi) - \gamma(e) = \gamma(bi)$

Multiplying a') by b') gives:

$(\gamma(b\pi))^2 - (\gamma(be))^2 = 0 \Longrightarrow \gamma(b\pi) = \gamma(be) \Longrightarrow \gamma(\pi) = \gamma(e)$ wich is false, because this would make the number i rational, according to equation b).

Therefore $(\pi \pm e)$ are both proved to be irrarional,

I would like to thank the readers for their time and their comments on this work, wich can to sent to me at : nicetovalcarcel@gmail.com