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(0/0) = 0 = Refuted!

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Abstract

Objective: The division $0/0$ has been investigated by numerous publications while the knowledge that $0/0 = 1$ is still not established yet.

Methods: A systematic re-analysis of the claim $(0/0) = 0$ was conducted again. Modus inversus was used to proof the logical consistency of such a claim.

Results: The new proof provides strict evidence that $0/0=0$ is not correct.

Conclusions: $0/0=0$ is refuted.

Keywords: *Division by zero, Modus inversus.*

Introduction

For most of the history of human mankind, careful observation, try and fail (experimentation) et cetera by humans themselves has been the foundation of generating knowledge while the knowledge itself has been given from generation to generation. Meanwhile, science as a systematic human enterprise is more or less a “formalized” study of different phenomena by additional scientific methods like inductive and deductive reasoning among others by which the most important output of science, knowledge, is achieved. In addition, one way to seek after

scientific knowledge is the scientific methodology used. Even if the details of scientific methods and practice may vary with time and place, those methods by which objective, reproduceable, or simple scientific knowledge is generated represents equally the point of departure for the unification of human knowledge too. However, false beliefs and deceptively bad arguments in science, even if popular, have the potential to endanger the certainty of scientific knowledge and human development. Scientific methodology should not only enable us to generate new scientific knowledge but also arm us against the missteps we might take with arguments and provide us with methods needed to detect and avoid such fallacies (Bennett, 2014) in science.

2. Material and methods

2.1. Methods

2.1.1. Definitions

Definition 1. (Number +0)

Let c denote the speed of light in vacuum, let ε_0 denote the electric constant and let μ_0 the magnetic constant. Let i denote the imaginary number (Bombelli, 1579). Let the arithmetic operation subtraction be signified by the minus sign ($-$). The number $+0$ is defined as the expression

$$+(c^2 \times \varepsilon_0 \times \mu_0) - (c^2 \times \varepsilon_0 \times \mu_0) \equiv +1 - 1 \equiv +0 \quad (1)$$

Definition 2. (Number +1)

Let c denote the speed of light in vacuum, let ε_0 denote the electric constant and let μ_0 the magnetic constant. Let i denote the imaginary number (Bombelli, 1579). The number $+1$ is defined as the expression

$$+(c^2 \times \varepsilon_0 \times \mu_0) \equiv +1 + 0 \equiv -i^2 = +1 \quad (2)$$

while “=” denotes the equals sign (Recorde, 1557) or equality sign (Rolle, 1690) used to indicate equality and “-” (Pacioli, 1494; Widmann, 1489) denotes minus signs used to represent the operations of subtraction and the notions of negative as well and “+” denotes the plus (Recorde, 1557) signs used to represent the operations of addition and the notions of positive as well.

Definition 3. (Number +2)

Let c denote the speed of light in vacuum, let ε_0 denote the electric constant and let μ_0 the magnetic constant. Let i denote the imaginary number (Bombelli, 1579). The number +2 is defined as the expression

$$+(c^2 \times \varepsilon_0 \times \mu_0) + (c^2 \times \varepsilon_0 \times \mu_0) \equiv +1 + 1 \equiv -i^2 - i^2 = +2 \quad (3)$$

while “=” denotes the equals sign (Recorde, 1557) or equality sign (Rolle, 1690) used to indicate equality and “-” (Pacioli, 1494; Widmann, 1489) denotes minus signs used to represent the operations of subtraction and the notions of negative as well and “+” denotes the plus (Recorde, 1557) signs used to represent the operations of addition and the notions of positive as well.

2.1.2. Modus inversus

Modus inversus is a proof method which can be used to analyze the consequences of some fundamental aspects of mathematical rules and theorems and to possibly overcome far reaching methodological problems in the foundations of mathematics. The origins of those mathematical problems are sometimes contentiously formulated centuries ago. The proof by modus inversus is a valid rule of inference “by which from a given proposition another is derived having for its subject the contradictory of the original subject and for its predicate the contradictory of the original predicate.” (I. Barukčić, 2019b; Toohey, 1948). In detail, the inverse of the modus ponens statement $P_t \rightarrow C_t$ or “If P_t is true, then C_t is true” is known to be the statement or the equation $\neg P_t \rightarrow \neg C_t$ or in spoken language: “If P_t is false, then C_t is false”. In other words, if $(+1 = +3)$ is false then $(+3 = +5)$ is false too. As long as modus inversus is not refuted it is necessary to rely on this proof methodology and the scientific results achieved are valid and cannot be ignored.

2.2. Axioms

2.2.1. Axiom 1 (Lex identitatis)

$$+1 = +1 \quad (4)$$

2.2.2. Axiom 2 (Lex contradictionis)

$$+1 = +0 \quad (5)$$

2.2.3. Axiom 3 (Lex negationis)

$$\frac{+1}{+0} = \neg = \text{Negation} \approx +\infty \quad (6)$$

3. Results

THEOREM 06.10.2019.1: $1 \times 0 = 0 \times 0$ is false.

CLAIM.

Null-Hypothesis: $1 \times 0 = 0 \times 0$ is true.

Alternative Hypothesis: $1 \times 0 = 0 \times 0$ is not true.

PROOF BY MODUS INVERSUS.

According to modus inversus (I. Barukčić, 2019b; Toohey, 1948), we start the proof with a premise, which is not true. Thus far, it is

$$+1 = +0 \quad (7)$$

Multiplying by zero, we obtain

$$+1 \times +0 = +0 \times +0 \quad (8)$$

Since this premise is not true, the conclusion is also not true.

QUOD ERAT DEMONSTRANDUM.

In other words, if $(+1=+0)$ is false then $(+1 \times +0 = +0 \times +0)$ is false.

THEOREM 06.10.2019.2: $(+0/+0)=+0$ is false.

CLAIM.

Null-Hypothesis: $(+0/+0) = +0$ is true.

Alternative Hypothesis: $(+0/+0) = +0$ is not true.

PROOF BY MODUS INVERSUS.

According to modus inversus (I. Barukčić, 2019b; Toohey, 1948), we start the proof with a premise, which is not true.

$$+1 = +2 \quad (9)$$

Multiplying by zero, we obtain

$$+1 \times +0 = +2 \times +0 \quad (10)$$

Today's still valid rules of mathematics demand that any number multiplied by zero is zero (I. Barukčić, 2019b, 2019a). The equation before changes to

$$+0 = +0 \quad (11)$$

Following among other authors Saitoh et al. (Michiwaki, Saitoh, & Yamada, 2016; Pinelas & Saitoh, 2018) it is $(+0/+0) = +0$. Substituting, we obtain

$$\frac{+0}{+0} = +0 \quad (12)$$

Since this premise $(+1=+2)$ is not true, the conclusion $(+0/+0) = +0$ is not true.

QUOD ERAT DEMONSTRANDUM.

In other words, if $(+1=+2)$ is not true then $(+0/+0) = +0$ is not true.

4. Discussion

To date, the mathematical expression $0/0$ is treated more or less as undefined besides of the evidence provided that $0/0 = 1$ (I. Barukčić, 2018, 2019b, 2019a; J. P. Barukčić & Barukčić, 2016). Meanwhile, as already proofed many times $(+0/+0) = +0$ is incorrect and an ideology misguided scientific poetry and nothing more but hot pseudo-scientific air hidden behind a definition made out of mental concrete. Thus far, even if there is place for interpretation and „poetry“ in science, there are rules, theorems or things, the way one might prefer, which are secured and clear too. Like ever, the starting point of the chain of arguments or of proofs provided is important too. With respect to the „der Ansatz“, the starting point of a proof, if the same is incorrect, while the rest of a proof is free of technical errors, the conclusion itself is incorrect too. The claim that $(+0/+0) = +0$ is thus far simply unimaginably wrong and devoid of any conceivable scientific foundation. Many of today's problems in science are due to such and similar inconsistencies of mathematics and the obviously unjustified dominance of mathematics and mathematician over other science and scientist. To be unchained from *deceptively bad mathematical definitions and arguments* scientist are forced to stand up and to escape from such an unjustified brutal mathematical slavery and “*the dictatorship of mathematics*” erected over physics and over other sciences at least since Newton (Newton, 1687) and his supporters. In the main, the power a master has over a slave as a result of a master/slave relation depends on the slave itself. We the humans as the mathematical slaves must abolish this illogical and inhuman mathematical slavery by refuting or destroying the power and the beauty of any incorrect and senseless mathematical definition or theorem. Humans, unchain mathematics by the weapons of classical logic from the rotten and sky-high cathedrals of fallacious mathematical definitions thus that mathematics can find the way back to true science.

5. Conclusion

In summary, $(+0/+0) = +0$ is a deceptively bad mathematical definition and refuted, ultimately.

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Author Contributions

The author confirms being the sole contributor of this work and has approved it for publication.

Conflict of Interest Statement

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

References

- Barukčić, I. "Classical Logic And The Division By Zero." *International Journal of Mathematics Trends and Technology IJMTT* 65.7 (2019): 31–73. <https://doi.org/10.14445/22315373/IJM-TT-V65I8P506>.
- Barukčić, I. "The Interior Logic of Inequalities." *International Journal of Mathematics Trends and Technology IJM-TT* 65.7 (2019): 146–155. <http://www.ijmtjournal.org/Volume-65/Issue-7/IJM-TT-V65I7P524.pdf>.
- Barukčić, I. "Zero Divided by Zero Equals One." *Journal of Applied Mathematics and Physics* 06.04 (2018): 836–853. <https://doi.org/10.4236/jamp.2018.64072>.
- Barukčić, J. P., & Barukčić, I. "Anti Aristotle—The Division of Zero by Zero." *Journal of Applied Mathematics and Physics* 04.04 (2016): 749–761. <https://doi.org/10.4236/jamp.2016.44085>.
- Bennett, B. *Logically Fallacious: The Ultimate Collection of Over 300 Logical Fallacies*. EBOOKIT.COM.
- Bombelli, R. *L' algebra : opera di Rafael Bombelli da Bologna, divisa in tre libri : con la quale ciascuno da se potrà venire in perfetta cognitione della teorica dell' Aritmetica : con una tavola copiosa delle materie, che in essa si contengono*. Retrieved from <http://www.e-rara.ch/doi/10.3931/e-rara-3918>.
- Michiwaki, H., Saitoh, S., & Yamada, M. "Reality of the Division by Zero $z/0 = 0$." *International Journal of Applied Physics and Mathematics* 6.1 (2016): 1–8. <https://doi.org/10.17706/ijapm.2016.6.1.1-8>.
- Newton, I. *Philosophiae Naturalis Principia Mathematica*. <https://doi.org/10.3931/e-rara-440>.
- Pacioli, L. *Summa de arithmetica, geometria, proportioni et proportionalità*. Retrieved from <http://doi.org/10.3931/e-rara-9150>.
- Pinelas, S., & Saitoh, S. "Division by Zero Calculus and Differential Equations." *Differential and Difference Equations with Applications*. 399–418. https://doi.org/10.1007/978-3-319-75647-9_33.
- Recorde, R. *The whetstone of witte, whiche is the seconde parte of Arithmetike: containyng the extraction of Rootes: The Coßike practise, with the rule of Equation: and the woorkes of Surde Numbers*. Retrieved from <http://archive.org/details/TheWhetstoneOfWitte>.
- Rolle, M. [1652-1719]. *Traité d'algèbre ou principes généraux pour résoudre les questions...* Retrieved from <https://www.e-rara.ch/doi/10.3931/e-rara-16898>.
- Toohey, J. J. *An elementary handbook of logic*. Retrieved from <http://archive.org/details/anelementaryhan00toohgoog>.
- Widmann, J. *Behende und hüpsche Rechenung auff allen Kauffmanschafft*. Retrieved from <http://hdl.loc.gov/loc.rbc/Rosenwald.0143.1>