Exposé court

27   *On arithmetic nature of the Euler's constant*

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The arithmetic nature of the Euler's constant γ is one of the biggest unsolved problems in number theory from almost three centuries. In an attempt to give a partial answer to the arithmetic nature of γ, Murty and Saradha made a conjecture on linear independence of digamma values. In particular, they conjectured that for any positive integer $q > 1$ and a field K over which the q-th cyclotomic polynomial is irreducible, the digamma values namely $\psi(a/q)$ where $1 \le a \le q$ with $(a, q) = 1$ are linearly independent over K. Further, they established a connection between the arithmetic nature of the Euler's constant γ to the above conjecture. In this talk, we first prove that the conjecture is true with at most one exception. Later on we also make some remarks on the linear independence of these digamma values with the arithmetic nature of the Euler's constant γ.

Bibliography

[1] C. Tapas and D. Sonika. On a conjecture of murty-saradha about digamma values. *Monatsh. Math.*, 199(1):23–43, 2022.