APPURAMATIONS TO EULER’S CONSTANT

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Abstract. We study a problem of finding good approximations to Euler’s constant \( \gamma = \lim_{n \to \infty} \sum_{k=1}^{n} \frac{1}{k} - \log(n + 1) \), by linear forms in logarithms and harmonic numbers. In 1995, C. Elsner showed that slow convergence of the sequence \( S_n \) can be significantly improved if \( S_n \) is replaced by linear combinations of \( S_n \) with integer coefficients. In this paper, considering more general linear transformations of the sequence \( S_n \) we establish new accelerating convergence formulae for \( \gamma \). Our estimates sharpen and generalize recent Elsner’s, Rivoal’s and author’s results.


Keywords and phrases: Euler’s constant; approximation; sequence transformation; convergence acceleration.

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