



Volume 9, Issue 2, Article 46

Some Inequalities Regarding a Generalization of Euler's Constant

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Keywords: Sequence, Convergence, Euler's constant, Approximation, Estimate, Series.

Date Received: 28/11/07

Date Accepted: 20/03/08

Subject Codes: 11Y60, 40A05.

Editors: [László Tóth](#),

Abstract:

The purpose of this paper is to evaluate the limit $\gamma(a)$ of the sequence

$$\left(\frac{1}{a} + \frac{1}{a+1} + \cdots + \frac{1}{a+n-1} - \ln \frac{a+n-1}{a} \right)_{n \in \mathbb{N}},$$

where $a \in (0, +\infty)$. We give some lower and upper estimates for

$$\frac{1}{a} + \frac{1}{a+1} + \cdots + \frac{1}{a+n-1} - \ln \frac{a+n-1}{a} - \gamma(a), \quad n \in \mathbb{N}.$$



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