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A geometric proof that e is irrational and a new measure of its irrationality. (English)

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Let $S(n)$ denote the Kempner-Smarandache arithmetic function defined by $S(n) = \min\{k > 0: n \text{ divides } k!\}$. The author proves the following interesting measure of irrationality for the number e , involving $S(n)$: for all integers p and q , with $q > 1$, one has $|e - p/q| > 1/(S(q) + 1)!$ From the two conjectures stated in this paper, we mention the following one: the inequality $q^2 < S(q)!$ holds for almost all q .

Reviewer: József Sándor (Cluj-Napoca)

MSC:

[11J72](#) Irrationality; linear independence over a field

[11A25](#) Arithmetic functions; related numbers; inversion formulas

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Keywords:

irrationality measures; arithmetic functions

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