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LETTER TO THE EDITOR

January 1, 1973

Dear Prof. Hoggatt:

HAPPY NEW YEAR. Here is a problem:

Let $p_1, p_2, \cdots, p_s$ be given primes and let $a_1 < a_2 < \cdots$ be the integers composed of the primes $p_1, p_2, \cdots p_r$. Put

$$A_k = [a_1, a_2, \cdots, a_k]$$

(least common multiple), then

$$\sum_{k=1}^{\infty} \frac{1}{A_k}$$

is irrational. (Conjecture) This is undoubtedly true, but I cannot prove it. All I can show is that

$$\sum_{k=1}{}' \frac{1}{A_k}$$

is irrational, where in Σ' the summation is extended only over the distinct A_k's (i.e., if

$$[a_1, \cdots, a_k] = [a_1, \cdots, a_{k+1}] ,$$

then we count only one of the $1/[a_1, \cdots, a_k]$).

Regards to all,

Paul Erdös