

A RECURRENCE RELATED TO $\zeta(k)$

SCOTT DUKE KOMINERS

Problem. For any positive integer $k > 1$, show that the recurrence defined by $T_1 = t$,

$$T_{n+1} = \frac{T_n^k}{\exp(k^n/n^k)} \quad \text{for } n > 1,$$

converges for any real, positive $t < \exp(\zeta(k))$, where $\zeta(k) = \sum_{i=1}^{\infty} \frac{1}{i^k}$.

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