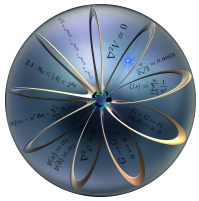

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exponential factorial

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Given a positive integer n, the "power tower" $n^{(n-1)^{(n-2)\cdots}}$ is the *exponential factorial* of n. The recurrence relation is $a_1 = 1$, $a_n = n^{a_{n-1}}$ for $n > 1$.

So for example, $9 = 3^{2^1}$, $262144 = 4^{3^{2^1}}$. The exponential factorial for 5 has almost two hundred thousand base 10 digits. The ones that are small enough are listed in sequence A049384 of Sloane's OEIS.

The sum of the reciprocals of the exponential factorials is a Liouville number.

$$\sum_{i=1}^{\infty} \frac{1}{a_i} \approx 1.611114925808376736111111$$