

Easter Eggs

Input file: `standard input`
Output file: `standard output`
Time limit: 4 seconds
Memory limit: 1024 megabytes

There are n initially empty buckets arranged in a line.

Every minute, Palych chooses one of the non-locked buckets uniformly at random and puts one easter egg into it! After that, you may lock any number of buckets, possibly zero. Once a bucket is locked, it remains locked forever.

You win as soon as the numbers of eggs in the buckets, from left to right, form a strictly increasing array.

You are not allowed to lock any buckets before the first egg is dropped. Also, if you lock all the buckets before you win — you lose, and this outcome must be avoided.

Your goal is to minimize the expected number of minutes until you win. Determine this minimum expected value.

Input

The first line contains one integer n ($2 \leq n \leq 100$) — the number of buckets.

Output

Output one real number — the minimum possible expected number of minutes until you win.

Your answer will be considered correct if its absolute or relative error does not exceed 10^{-6} .

Example

<code>standard input</code>	<code>standard output</code>
2	2.0