Problem E
Euler's Number

Euler's number (you may know it better as just e) has a special place in mathematics. You may have encountered e in calculus or economics (for computing compound interest), or perhaps as the base of the natural logarithm, $\ln x$, on your calculator.

While e can be calculated as a limit, there is a good approximation that can be made using discrete mathematics. The formula for e is:

$$\begin{aligned} e &= \sum_{i=0}^{n} \frac{1}{i!} \\ &= \frac{1}{0!} + \frac{1}{1!} + \frac{1}{2!} + \frac{1}{3!} + \frac{1}{4!} + \cdots \end{aligned}$$

Note that $0! = 1$. Now as n approaches ∞, the series converges to e. When n is any positive constant, the formula serves as an approximation of the actual value of e. (For example, at $n = 10$ the approximation is already accurate to 7 decimals.)

You will be given a single input, a value of n, and your job is to compute the approximation of e for that value of n.

Input

A single integer n, ranging from 0 to 10 000.

Output

A single real number – the approximation of e computed by the formula with the given n. All output must be accurate to an absolute or relative error of at most 10^{-12}.

Sample Input 1	Sample Output 1
`3`	`2.6666666666666665`

Sample Input 2	Sample Output 2
`15`	`2.718281828458995`

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