# Problem K: K.O. Kids II
## Time limit: 1.5 seconds

Its Glen's birthday again and this year everybody is invited to take part in a parkour game. The game works as follows: The $n$ kids queue up and do the parkour one-after-the-other. The parkour consists of $k$ obstacles, which have to be beaten in order $1, 2, \ldots, k$. Obstacle $i$ is overcome with probability $a_i$ and failed with probability $1 - a_i$. In case a participant fails at an obstacle his or her run is over. There is one twist: once one participant manages to beat a certain obstacle, all the other participants see how it's done and will *always* beat this obstacle as well.

As it is his birthday, Glen can freely choose his position in the queue. Compute the maximum probability for him being the *first* to beat the parkour when he chooses the initial position in the queue optimally.

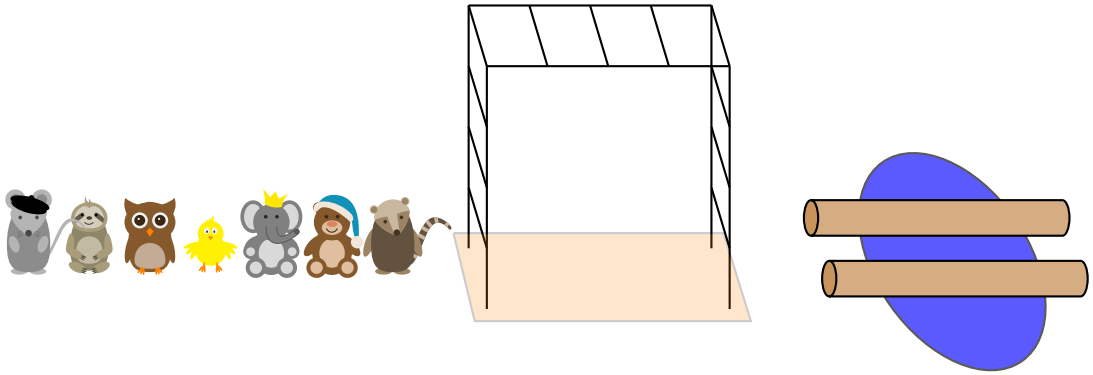

Figure K.1: Glen and his friends queueing up for the obstacle parkour course.

## Input

The input consists of:

- One line with two integers $n$ and $k$ ($1 \leq n \leq 10^3, 1 \leq k \leq 10^4$), the number of kids and obstacles.
- One line with $k$ real numbers $a_1, \ldots, a_k$ ($0 < a_i < 1$ for all $i$), where $a_i$ is the probability that obstacle $i$ is overcome. Every real number has at most six digits after the decimal point.

## Output

Print the maximum probability for Glen to be the first to beat the parkour. Your answer should have an absolute or relative error of at most $10^{-6}$.

| Sample Input 1 | Sample Output 1 |
| --- | --- |
| 3 3<br>0.5 0.5 0.5 | 0.1875000000 |

| Sample Input 2 | Sample Output 2 |
| --- | --- |
| 2 1<br>0.1 | 0.1000000000 |

| Sample Input 3 | Sample Output 3 |
| --- | --- |
| 3 3<br>0.5 0.4 0.3 | 0.1302000000 |