Problem G. Glass Bead Game

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

Abstractions are fine, but I think people also have to breathe air and eat bread.

— Hermann Hesse, *The Glass Bead Game*

You are playing with n distinct glass beads $B_1, B_2, \ldots, B_n$ in some order. In each step, you move exactly one bead to the front. The cost of moving the bead to the front is the number of beads before that bead. For example, if we move B_1 in the list B_2, B_4, B_3, B_1 the total cost is 3 and the resulting sequence of beads is B_1, B_2, B_4, B_3.

Suppose that at each step glass bead B_i is moved with probability $p_i > 0$, where $\sum_{i=1}^{n} p_i = 1$. What is the limit of the expected cost of the m-th move, when m tends to infinity?

Input

The first line contains an integer n ($1 \le n \le 100$).

The second line contains n real numbers $p_1, p_2, \ldots, p_n$ each with 6 digits of precision.

Output

Output one real number, the answer.

Your answer will be considered correct if its absolute or relative error does not exceed 10^{-6}. Formally let your answer be a, jury answer be b. Your answer will be considered correct if $\frac{|a-b|}{\max(1,|b|)} \le 10^{-6}$.

Examples

standard input	standard output
2 0.500000 0.500000	0.500000000000000
3 0.500000 0.250000 0.250000	0.916666666666667