V-Diagram

Input file:	*standard input*
Output file:	*standard output*
Time limit:	1 second
Memory limit:	1024 mebibytes

A 1-indexed integer sequence a of length n is a V-diagram if $n \geq 3$ and there exists an index i $(1 < i < n)$ satisfying the following:

- $a_j > a_{j+1}$ for $1 \leq j < i$;
- $a_j > a_{j-1}$ for $i < j \leq n$.

Given a V-diagram a, find a V-diagram b with the maximum possible average such that b is a consecutive subsequence of a.

A consecutive subsequence of a sequence can be obtained by removing some (possibly zero) elements from the beginning and end of the sequence.

Input

Each test contains multiple test cases. The first line contains a single integer t $(1 \leq t \leq 10^5)$ denoting the number of test cases. For each test case:

The first line contains one integer n $(3 \leq n \leq 3 \cdot 10^5)$ denoting the length of the integer sequence a.

The second line contains n integers $a_1, a_2, \ldots, a_n$ $(1 \leq a_i \leq 10^9)$ denoting the sequence a itself.

It is guaranteed that a is a V-diagram, and the sum of n over all test cases does not exceed $3 \cdot 10^5$.

Output

For each test case, output a real number denoting the maximum possible average.

Your answer is considered correct if its absolute or relative error does not exceed 10^{-9}.

Formally, let your answer be x, and the jury's answer be y. Your answer will be considered correct if and only if $\frac{|x-y|}{\max(1,|y|)} \leq 10^{-9}$.

Example

standard input	*standard output*
2 4 8 2 7 10 6 9 6 5 3 4 8	6.75000000000000000000 5.83333333333333037 27