Minimax Limit

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	512 megabytes

Min and Max have a continuous piecewise linear function $f(x)$. The function $f(x)$ is defined on the segment $[0, n]$ as follows:

- if $x \in [0, n]$ is an integer, then $f(x) = a_x$;
- otherwise, if $k = \lfloor x \rfloor$, then $f(x) = f(k) + (x - k)(f(k + 1) - f(k))$.

Min and Max are playing a game. Before the game starts they choose two positive real parameters A and ε. There is a counter T initially equal to A. Before the game starts, Max chooses an arbitrary real number $x \in [0, n]$. Players then proceed to take turns starting from Min. During a player's turn:

- if $T \leq 0$, the game is over;
- the player can change x to any real number $x' \in [0, n]$ such that $|x - x'| \leq T$;
- T is decreased by ε.

When the game is over, the result of the game is equal to $f(x)$. Min wants to minimize the result, while Max wants to maximize it.

Let $R(A, \varepsilon)$ be the result of the game with parameters A and ε if both players play optimally. Compute $\lim\limits_{\varepsilon \to 0} R(A, \varepsilon)$. It is guaranteed that this limit exists.

Input

The first line contains two integers n and A ($1 \leq A \leq n \leq 100\,000$).

The second line contains $n + 1$ integers $a_0, \ldots, a_n$ ($-10^6 \leq a_i \leq 10^6$).

Output

Print a single real number $\lim\limits_{\varepsilon \to 0} R(A, \varepsilon)$. Your answer will be accepted if its absolute or relative error does not exceed 10^{-4}.

Examples

standard input	standard output
1 1 0 1	0.5000000000
2 1 0 2 1	1.4285714283