Problem F. Fatbike

Input file:	*standard input*
Output file:	*standard output*
Time limit:	3 seconds
Memory limit:	1024 mebibytes

A new epidemic has hit the Netherlands, but not one like COVID. Rather, there is an epidemic of electric bicycles with fat tires, so called "fatbikes", which terrorize the streets! To make matters worse, your good friend Leon also purchased a fatbike, and he enjoys testing out its limits.

After a long, boring shift serving **bitterballen** at the pub, waiter Leon is cycling along a straight road that is L meters long. For simplicity, we model the road as the number line from $x = 0$ to $x = L$. Leon is cycling back from $x = 0$ to his house at position $x = L$.

On the road, there is a speed limit of v $\frac{\text{meters}}{\text{second}}$, but Leon's souped-up fatbike can go way faster.

There are n speed cameras on the road. They are at locations $0 < x_1 < x_2 < \ldots < x_n \leq L$.

Leon starts with speed v at $x = 0$ and can accelerate by at most 1 $\frac{\text{meter}}{\text{second}^2}$[‡]. The fatbike has excellent brakes, so Leon can instantly decelerate to any lower non-negative speed. Note that the fatbike does not have a maximum speed.



Figure 6: Leon riding on his souped-up fatbike.

If Leon passes a camera with a speed larger than the allowed limit v, he will get a fine dropped in his mailbox. Of course, he will not pay the fine, and he will just throw it away in the bin. However, that still costs c seconds of time!

What is the minimum possible time Leon needs to get to his house and throw away all the fines he accumulated in his mailbox if he cycles optimally?

Input

The first line contains four integers n, L, v, c ($1 \leq n \leq 10^6$, $1 \leq L, v, c \leq 10^9$), the number of speed cameras, the length of the road, the speed limit, and the time it takes to throw a fine in the bin. The second line consists of n integers x_i ($0 < x_1 < x_2 < \ldots < x_n \leq L$), the positions of the speed cameras in strictly increasing order.

Output

Output the minimum time in seconds for Leon to get to his house and throw away all the fines.

Your answer is considered correct if its absolute or relative error does not exceed 10^{-6}.

Formally, let your answer be a, and the jury's answer be b. Your answer is accepted if and only if $\frac{|a-b|}{\max(1,|b|)} \leq 10^{-6}$.

[‡]Starting with speed v_0 at $x = 0$, after t seconds of maximum acceleration, his position will be $v_0 t + \frac{1}{2}t^2$, and his speed will be $v_t = v_0 + t$.

Examples

standard input	*standard output*
1 1 1 1 1	0.732050807568877
5 10 3 2 2 3 7 9 10	2.96745775725644
1 1000000000 1000000000 1000000000 1000000000	0.9999999995
1 10000 1 1 5000	141.424891727022