Tet holiday discount

After withdraw money from the bank, Phuc want to find out how much the actual interest rate was applied to his saving account. Please help him.

Input

The first line contains two integer N and M. These numbers, in turn, denote the amount of money Phuc received and number of months he deposited money into his account. ($N < 10^{18}$, $M \leq 120$)

The second line contains M non-negative integers which are amount of money Phuc put into the account in the increasing order of time.

Output

A real number which is the actual interest rate (rounded to 3 decimal places)

Example

Input	Output
50071920 10 3200000 4500000 4200000 6000000 4100000 3500000 4000000 4450000 3750000 3950000	0.033