C. Three-level Laser

An atom of element X can exist in n distinct states with energies $E_1 < E_2 < ... < E_n$. Arkady wants to build a laser on this element, using a three-level scheme. Here is a simplified description of the scheme.

Three distinct states i, j and k are selected, where $i < j < k$. After that the following process happens:

1. initially the atom is in the state i,
2. we spend $E_k - E_i$ energy to put the atom in the state k,
3. the atom emits a photon with useful energy $E_k - E_j$ and changes its state to the state j,
4. the atom spontaneously changes its state to the state i, losing energy $E_j - E_i$,
5. the process repeats from step 1.

Let's define the energy conversion efficiency as , i. e. the ration between the useful energy of the photon and spent energy.

Due to some limitations, Arkady can only choose such three states that $E_k - E_i \leq U$.

Help Arkady to find such the maximum possible energy conversion efficiency within the above constraints.

Input

The first line contains two integers n and U ($3 \leq n \leq 10^5$, $1 \leq U \leq 10^9$) — the number of states and the maximum possible difference between E_k and E_i.

The second line contains a sequence of integers $E_1, E_2, ..., E_n$ ($1 \leq E_1 < E_2... < E_n \leq 10^9$). It is guaranteed that all E_i are given in increasing order.

Output

If it is not possible to choose three states that satisfy all constraints, print -1.

Otherwise, print one real number η — the maximum possible energy conversion efficiency. Your answer is considered correct its absolute or relative error does not exceed 10^{-9}.

Formally, let your answer be a, and the jury's answer be b. Your answer is considered correct if .

Examples

input

```
4 4
1 3 5 7
```

output

```
0.5
```

input

```
10 8
10 13 15 16 17 19 20 22 24 25
```

output

```
0.875
```

input

```
3 1
2 5 10
```

```
output
```

```
-1
```

Note

In the first example choose states $1, 2$ and 3, so that the energy conversion efficiency becomes equal to .

In the second example choose states $4, 5$ and 9, so that the energy conversion efficiency becomes equal to .