Nadir

Time Limit	Memory Limit
1 second	128 MB

Statement

There are N towers of cubes in a row, numbered 1 to N from left to right. The ith tower has a_i cubes in it. A row of towers is a *valley* if it can be split into two (possibly empty) sections where:

- The left section forms a non-increasing sequence, and
- The right section forms a non-decreasing sequence.

~~Unfortunately, due to the recent collapse of the cryptocurrency exchange FTX, we have lost our source of funding and cannot provide you with a diagram.~~

You are tasked with considering Q scenarios: In the ith scenario, what is the fewest cubes you must add to turn the towers $1, \ldots, k_i$ into a valley? You cannot remove any cubes.

Input

- The first line of input contains the integers N and Q.
- The next line of input contains the space-separated integers $a_1, \ldots, a_N$.
- The next line of input contains the space-separated integers $k_1, \ldots, k_Q$.

Output

Output Q lines, the ith of which is the answer for the ith scenario.

Sample Input 1

```
6 3
4 2 3 1 6 6
3 4 6
```

Sample Output 1

```
0
1
1
```

Sample Input 2

```
5 3
1 2 3 2 1
1 3 5
```

Sample Output 2

```
0
0
3
```

Constraints

- $1 \leq N, Q \leq 10^5$
- $1 \leq a_i \leq 10^9$
- $1 \leq k_j \leq N$
- All k_j are unique and in ascending order.

Subtasks

Number	Points	Additional constraints
1	25	$Q = 1$ and $k_j = N$
2	26	$a_i \leq 10$
4	49	No further constraints