

Paired Up

time limit per test: 1 second
memory limit per test: 488.3 megabytes
input: standard input
output: standard output

points: 30 · problem code: pairedup · author: jszqlw

Problem Statement

You are given a list of n integers $X = [x_1, x_2, \dots, x_n]$. Now, imagine you have a list P of all pairings of integers from 1 to n such that P is sorted in increasing order. In other words, you have:

$$P = \{(1, 1), (1, 2), (1, 3), \dots, (1, n), (2, 1), (2, 2), (2, 3), \dots, (2, n), \dots, (n, 1), (n, 2), (n, 3), \dots, (n, n)\}$$

Now, you are given Q queries, each will contain a single integer q_i such that $1 \leq q_i \leq |P|$, given some q_i you should determine $f(q_i)$:

$$f(k) = \sum_{i=1}^k x_{P_i[0]} - x_{P_i[1]}$$

In other words, $f(k)$ takes the first k pairs in P , and for each pair (a, b) it will calculate $x_a - x_b$ and sum all of them together.

Input Format

Your first line will contain two space-separated integers n and q

Your next line will contain n space-separated integers x_1 through x_n .

Your next Q lines will contain one integer each, the i^{th} of which representing q_i .

Output Format

You should output a single integer for each query (in the same order the queries appear), the i^{th} of which should be $f(q_i)$.

Constraints

- $1 \leq n, q \leq 10^5$
- $1 \leq q_i \leq n^2$
- $-10^3 \leq x_i \leq 10^3$

Sample Cases

Input 1

```
3 3
11 7 5
4
6
9
```

Output 1

```
6
8
0
```

Explanation 1

Here $P = [(1, 1), (1, 2), (1, 3), (2, 1), (2, 2), (2, 3), (3, 1), (3, 2), (3, 3)]$.

For the first query $q_1 = 4$, we calculate $(x_1 - x_1) + (x_1 - x_2) + (x_1 - x_3) + (x_2 - x_1) = (11 - 11) + (11 - 7) + (11 - 5) + (7 - 11) = 6$. For the second query $q_1 = 6$, we calculate $(x_1 - x_1) + (x_1 - x_2) + (x_1 - x_3) + (x_2 - x_1) + (x_2 - x_2) + (x_2 - x_3)$. For the third query $q_1 = 9$, we calculate $(x_1 - x_1) + (x_1 - x_2) + (x_1 - x_3) + (x_2 - x_1) + (x_2 - x_2) + (x_2 - x_3) + (x_3 - x_1) + (x_3 - x_2) + (x_3 - x_3)$.

Input 2

```
10 5
-5 10 -1 9 -4 6 3 -1 -7 -5
20
36
8
79
38
```

Output 2

```
40
64
-57
126
80
```

Template

```
n, q = map(int, input().split())
numbers = list(map(int, input().split()))
queries = [int(input()) for _ in range(q)]

# print your output
```