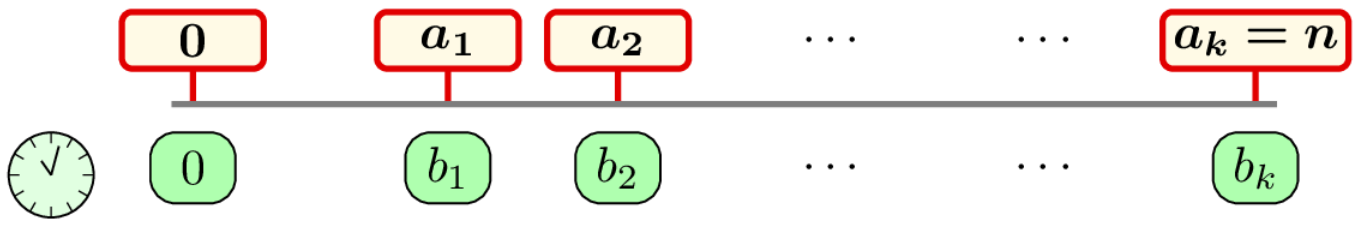
E. Find the Car

time limit per test: 3 seconds
memory limit per test: 256 megabytes

Timur is in a car traveling on the number line from point 0 to point n. The car starts moving from point 0 at minute 0.

There are $k+1$ signs on the line at points $0, a_1, a_2, \ldots, a_k$, and Timur knows that the car will arrive there at minutes $0, b_1, b_2, \ldots, b_k$, respectively. The sequences a and b are strictly increasing with $a_k = n$.



Between any two adjacent signs, the car travels with a **constant speed**. Timur has q queries: each query will be an integer d, and Timur wants you to output how many minutes it takes the car to reach point d, **rounded down to the nearest integer**.

Input

The first line contains a single integer t ($1 \le t \le 10^4$) — the number of test cases.

The first line of each test case contains three integers n, k, and q, ($k \le n \le 10^9$; $1 \le k, q \le 10^5$) — the final destination, the number of points Timur knows the time for, and the number of queries respectively.

The second line of each test case contains k integers a_i ($1 \le a_i \le n$; $a_i < a_{i+1}$ for every $1 \le i \le k-1$; $a_k = n$).

The third line of each test case contains k integers b_i ($1 \le b_i \le 10^9$; $b_i < b_{i+1}$ for every $1 \le i \le k-1$).

Each of the following q lines contains a single integer d ($0 \le d \le n$) — the distance that Timur asks the minutes passed for.

The sum of k over all test cases doesn't exceed 10^5, and the sum of q over all test cases doesn't exceed 10^5.

Output

For each query, output a single integer — the number of minutes passed until the car reaches the point d, rounded down.

Example

input Copy

```
4
10 1 3
10
10
0
6
7
10 2 4
4 10
4 7
6
4
2
7
1000000000 1 1
1000000000
1000000000
99999999
6 1 3
6
5
2
6
5
```

output Copy

```
0 6 7
5 4 2 5
99999999
1 5 4
```

Codeforces Round 944 (Div. 4)
Finished
Practice

→ Virtual participation

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ Clone Contest to Mashup

You can clone this contest to a mashup.

Clone Contest

→ Submit?

Language: GNU G++20 13.2 (64 bit, win

Choose file: Choose File No file chosen

Submit

→ Last submissions

Submission	Time	Verdict
260584802	May/11/2024 23:34	Accepted
260467395	May/11/2024 03:53	Runtime error on test 2
260467281	May/11/2024 03:50	Runtime error on test 2
260467262	May/11/2024 03:50	Runtime error on test 2
260391021	May/10/2024 19:08	Wrong answer on test 2

→ Problem tags

binary search math sortings *1500

No tag edit access

→ Contest materials

- Announcement (en)
- Tutorial (en)

Note

For the first test case, the car goes from point 0 to point 10 in 10 minutes, so the speed is 1 unit per minute and:

- At point 0, the time will be 0 minutes.
- At point 6, the time will be 6 minutes.
- At point 7, the time will be 7 minutes.

For the second test case, between points 0 and 4, the car travels at a speed of 1 unit per minute and between 4 and 10 with a speed of 2 units per minute and:

- At point 6, the time will be 5 minutes.
- At point 4, the time will be 4 minutes.
- At point 2, the time will be 2 minutes.
- At point 7, the time will be 5.5 minutes, so the answer is 5.

For the fourth test case, the car travels with 1.2 units per minute, so the answers to the queries are:

- At point 2, the time will be $1.66\ldots$ minutes, so the answer is 1.
- At point 6, the time will be 5 minutes.
- At point 5, the time will be $4.16\ldots$ minutes, so the answer is 4.