

B. Lasers

time limit per test: 2 seconds

memory limit per test: 256 megabytes

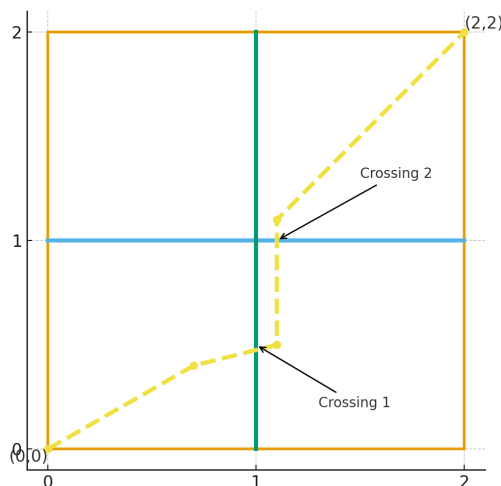
There is a 2D-coordinate plane that ranges from $(0, 0)$ to (x, y) . You are located at $(0, 0)$ and want to head to (x, y) .

However, there are n horizontal lasers, with the i -th laser continuously spanning $(0, a_i)$ to (x, a_i) . Additionally, there are also m vertical lasers, with the i -th laser continuously spanning $(b_i, 0)$ to (b_i, y) .

You may move in any direction to reach (x, y) , but your movement must be a continuous curve that lies inside the plane. Every time you cross a vertical or a horizontal laser, it counts as one crossing. Particularly, if you pass through an intersection point between two lasers, it counts as **two crossings**.

For example, if $x = y = 2$, $n = m = 1$, $a = [1]$, $b = [1]$, the movement can be as follows:

Minimum crossings = 2 (must cross $x=1$ and $y=1$ once each)



What is the minimum number of crossings necessary to reach (x, y) ?

Input

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

The first line of each test case contains four integers n, m, x , and y ($1 \leq n, m \leq 2 \cdot 10^5, 2 \leq x, y \leq 10^9$).

The following line contains n integers a_1, a_2, \dots, a_n ($0 < a_i < y$) — the y-coordinates of the horizontal lasers. It is guaranteed that $a_i > a_{i-1}$ for all $i > 1$.

The following line contains m integers b_1, b_2, \dots, b_m ($0 < b_i < x$) — the x-coordinates of the vertical lasers. It is guaranteed that $b_i > b_{i-1}$ for all $i > 1$.

It is guaranteed that the sum of n and m over all test cases does not exceed $2 \cdot 10^5$.

Output

For each test case, output the minimum number of crossings necessary to reach (x, y) .

Example

input

```
2
1 1 2 2
1
1
2 1 100000 100000
42 58
```

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Codeforces Round 1050 (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++17 7.3.0

Choose file: Escolher Arquivo Nenhuma...colhido

Submit

→ Last submissions

Submission	Time	Verdict
338461624	Sep/13/2025 18:41	Accepted
338460124	Sep/13/2025 18:39	Time limit exceeded on test 2
338456806	Sep/13/2025 18:36	Wrong answer on test 1

→ Problem tags

geometry *800

No tag edit access

→ Contest materials

- Announcement (en) ✕
- Tutorial (en) ✕

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1

output

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2

3

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