

Problem GEOSUCKS: Geometry sucks

Everybody knows that most geometrical problems, posed in programming contests, suck. However, this is a really easy problem. Given an arbitrary polygon and a point, you have to determine if the point lies within the polygon or not (in our terminology, the border of a polygon belongs to its inside, which means that e.g. all vertices of a polygon lie within it).

Input

Input consists of a number of test cases, each of which consists of two lines. The first line contains the description of the polygon:

$n \ x_1 \ y_1 \ x_2 \ y_2 \ \dots \ x_n \ y_n.$

n is the number of points that make up the polygon, and all the (x_j, y_j) pairs are the descriptions of the n points. The polygon's points are given in their "natural" order. The second line of every test case contains the description of the point to be examined: $x_p y_p.$

Input is ended by EOF.

Output

For each test case, print YES if the point lies within the polygon and NO otherwise.

Sample Input 1

```
4 0 0 1 0 1 1 0 1
0.5 0.5
3 1 2 5 2 3 4
0 0
10 2 1 4 2 5 1 6 4 4 5 3 4 2 6 1 4 2.7 3 1 2
2.0 4.0
10 2 1 4 2 5 1 6 4 4 5 3 4 2 6 1 4 2.7 3 1 2
2.0 3.0
```

Sample Output 1

```
YES
NO
YES
NO
```