Problem A. Pizza

Input file:	*standard input*
Output file:	*standard output*
Time limit:	10 seconds
Memory limit:	512 mebibytes

Little Vitechka got a job at pizza delivery. When he started his work, he found a problem: the company in which he works produces pizzas and boxes for them of very unusual form. Their forms can be arbitrary convex polygons. To start the delivery, Vitechka has to fit all of the pizzas into their boxes. While doing so, he can't flip the pizzas (but he can rotate them).

Help Vitechka to solve this problem. For every pizza, determine if it is possible to fit it in its box, and if yes, find out how to do that.

Input

The first line contains an integer t ($1 \le t$), the number of pizzas. It is followed by t blocks. Each block describes a pizza and its box.

The first line of a block contains an integer n ($3 \le n \le 30$), the number of vertices in the polygon describing the shape of the pizza. Each of the next n lines contains two real numbers not exceeding 10^6 by the absolute value, which are coordinates of a single vertex of the polygon. The vertices are given in the counter-clockwise order. The next line contains an integer m ($3 \le m \le 30$), the number of vertices in the polygon describing the shape of the box. Then follows the description of the box shape in the same format.

All real numbers in the input contain no more than twenty decimal digits after the point.

The total number of vertices of all polygons does not exceed 10^3.

It is guaranteed that, if we move each point of a block by distance at most 10^{-3} in any direction, the test will still be correct, and the possibility to fit the pizza into its box will not change.

Output

For each block, if it is impossible to fit the pizza into the box, print "`NO`" on a single line. Otherwise, on the first line, print "`YES`", and on the second line, print three real numbers describing the motion of the pizza. The first number must be angle by which the pizza must be rotated around the origin. The second and the third numbers are the coordinates of the vector, by which the pizza should be moved afterwards. After applying the described motion, the pizza should fit into the box. The pizza is considered inside the box if each of its vertices is located at distance no more than 10^{-3} from the box.

Example

standard input	standard output
2 3 0 0 2 0 0 2 3 3 0 3 3 0 3 3 3 0 3 3 0 3 3 0 0 2 0 0 2	NO YES 3.1415926 3 3