D. Tetragon

time limit per test: 3 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You're given the centers of three equal sides of a strictly convex tetragon. Your task is to restore the initial tetragon.

Input

The first input line contains one number T — amount of tests ($1 \le T \le 5 \cdot 10^4$). Each of the following T lines contains numbers $x_1, y_1, x_2, y_2, x_3, y_3$ — coordinates of different points that are the centers of three equal sides (non-negative integer numbers, not exceeding 10).

Output

For each test output two lines. If the required tetragon exists, output in the first line `YES`, in the second line — four pairs of numbers — coordinates of the polygon's vertices in clockwise or counter-clockwise order. Don't forget, please, that the tetragon should be strictly convex, i.e. no 3 of its points lie on one line. Output numbers with 9 characters after a decimal point.

If the required tetragon doen't exist, output `NO` in the first line, and leave the second line empty.

Examples

input
3 1 1 2 2 3 3 0 1 1 0 2 2 9 3 7 9 9 8

output
NO YES 3.5 1.5 0.5 2.5 -0.5 -0.5 2.5 0.5 NO