Mr. Credo

Input file:	*standard input*
Output file:	*standard output*
Time limit:	2 seconds
Memory limit:	256 mebibytes

Consider the two-dimensional plane Oxy. There are n spotlights. When the i-th spotlight is placed at some point and turned on, it lights up all the points belonging to the interior or the border of an angle of measure ϕ_i ($0^\circ < \phi_i < 360^\circ$) and vertex in the chosen point (its vertex is also considered to be lit up). Each spotlight can be rotated arbitrarily and may be placed in an arbitrary point of the plane.

You and your friends want to light up the whole plane in order to protect something very important from the intrusion. First you tried to put all spotlights into the same point, but after some attempts you discovered that there exists no way to rotate all the spotlights so that they light up every point on the plane. After that, one of your friends suggested that, if you spread the spotlights in some optimal way, then it would be possible to light up the whole plane. He even told the points where you should put the spotlights, as well as how you should rotate them.

Having an enormous mathematical intuition, you suspect that he is wrong, and the whole plane still isn't lit up. To prove that he is wrong, you are even going to present an uncovered circle of radius 1 (that is, all points belonging to the interior of that circle and its border shouldn't be lit up), that denotes an intruder that is able to hide in the darkness, not being lit by your spotlights.

Write a program which, given the description of all spotlights, finds a point (x_0, y_0) such that the circle of radius 1 with center in (x_0, y_0) is completely uncovered by the spotlights.

Input

The first line of input contains a single integer n ($1 \le n \le 2 \cdot 10^5$), the number of spotlights.

The following n lines contain descriptions of spotlights. Each spotlight description consists of four integers x_i, y_i, ϕ_i, α_i ($-50 \le x_i, y_i \le 50$, $0 < \phi_i < 1\,296\,000$, $0 \le \alpha_i < 1\,296\,000$). Here, x_i and y_i are coordinates of the corresponding spotlight, ϕ_i and α_i are angles measured in arcseconds (see Notes section for clarification), equal to the angular measure of the spotlight and the angle of its rotation respectively.

The definition of a rotation angle is the following. Consider the horizontal ray in positive direction of x-coordinate with the initial point at (x_i, y_i), denote it as l_0. Let's denote as l_γ the result of rotation of l_0 around the point (x_i, y_i) in counter-clockwise direction by angle γ. Then the spotlight lights up all points that are swept when a ray is being rotated from direction l_{α_i} to direction $l_{\alpha_i+\phi_i}$ in counter-clockwise direction.

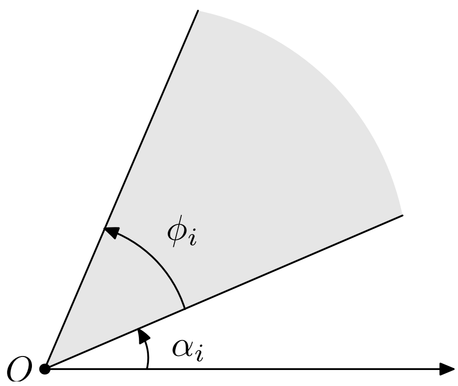

Illustration for the input format.

It is guaranteed that the given set of spotlights can't light the whole plane if they are all put into a single point and rotated arbitrarily.

Output

If your intuition failed, and the whole plane is being actually lit up, print the only word "NO".

Otherwise, on the first line, print the only word "YES", and on the following line, print two **integers** x_0, y_0 satisfying the condition $-10^9 \le x_0, y_0 \le 10^9$, the coordinates of the center of some uncovered circle. It is guaranteed that if there exists an uncovered point, then there also exists an uncovered circle satisfying the conditions above.

Example

standard input	standard output
4 1 2 486000 0 -1 1 324000 648000 1 0 108000 0 1 0 108000 1188000	YES -3 3

Note

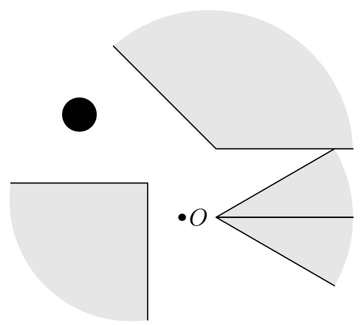

Illustration for the sample test.

An arcsecond is a unit of angular measurement, it is denoted as $''$. It is equal to $\frac{1}{3600}$ of a degree, that is, the full circle is equal to $1\,296\,000''$.