

Problem E. LaLa and Monster Hunting (Part 1)

Input file: standard input
Output file: standard output
Time limit: 5 seconds
Memory limit: 1024 megabytes

A dreadful monster has been witnessed in a forest near the city of **magic** Sharia, and a group of valorous adventurers will hunt it down in few days before it hurts anyone. However, **LaLa** knows that the real reason those adventurers are willing to take the risk is to obtain the rare **magic** stone that the monster is known to produce in its intestines. **LaLa** would like to obtain the **magic** stone before they do, as it is known to be quite beautiful.

LaLa will first locate the monster with her **magic**. **LaLa** has placed a bunch of **magic** tools within the forest, each of which has some power associated with it.

Consider the circles centered at each **magic** tool with radius equal to its power. **LaLa**'s **magic** will successfully locate the monster if and only if the convex hull of the circles contains the location of the monster.

Write a program that determines whether **LaLa** will be able to locate the monster.

Input

The input is given in the following format:

$$\begin{array}{r} N \\ x_0 \quad y_0 \quad r_0 \\ x_1 \quad y_1 \quad r_1 \\ \quad \quad \quad \vdots \\ x_{N-1} \quad y_{N-1} \quad r_{N-1} \end{array}$$

where N is the number of **magic** tools placed in the forest, the i -th of which is located at (x_i, y_i) and has power r_i . Here, assume that the forest is a two-dimensional plane where the monster is located at $(0, 0)$.

The input satisfies the following constraints:

- All the numbers in the input are integers.
- $1 \leq N \leq 1\,000\,000$
- $-1\,000\,000 \leq x_i, y_i \leq 1\,000\,000$ for all integers $0 \leq i < N$
- $0 \leq r_i \leq 1\,000\,000$ for all integers $0 \leq i < N$
- **The distance between point $(0, 0)$ and the boundary of the convex hull of N circles, i -th of which is centered at (x_i, y_i) and has radius r_i , is at least 1.**

Output

If **LaLa**'s **magic** will successfully locate the monster, print a single string "Yes". Otherwise, print a single string "No". You may print each character in either case (lower or upper).

Examples

standard input	standard output
<pre>3 -3 0 1 0 0 3 3 0 1</pre>	Yes
<pre>3 2 0 1 0 2 1 -5 -5 3</pre>	Yes
<pre>1 3 3 1</pre>	No

Note

The following illustrates the configuration of the **magic** tools for the sample tests. The red curve denotes the boundary of the convex hull.

