D. Pair Of Lines

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You are given n points on Cartesian plane. Every point is a lattice point (i. e. both of its coordinates are integers), and all points are distinct.

You may draw two straight lines (not necessarily distinct). Is it possible to do this in such a way that every point lies on at least one of these lines?

Input

The first line contains one integer n $(1 \le n \le 10^5)$ — the number of points you are given.

Then n lines follow, each line containing two integers x_i and y_i $(|x_i|, |y_i| \le 10^9)$— coordinates of i-th point. All n points are distinct.

Output

If it is possible to draw two straight lines in such a way that each of given points belongs to at least one of these lines, print `YES`. Otherwise, print `NO`.

Examples

input
5 0 0 0 1 1 1 1 -1 2 2
output
YES

input
5 0 0 1 0 2 1 1 1 2 3
output
NO

Note

In the first example it is possible to draw two lines, the one containing the points 1, 3 and 5, and another one containing two remaining points.