Convex Crusher

Input file:	`standard input`
Output file:	`standard output`
Time limit:	2 seconds
Memory limit:	1024 megabytes

You are given N points on a 2D plane. The coordinates of the i-th point are (x_i, y_i). You will mark some of these N points such that the following condition is satisfied:

- There is no convex quadrilateral whose four distinct vertices are among the marked points.

Find the maximum possible number of marked points.

Definition of Convex Quadrilateral

A quadrilateral formed by four distinct points on a plane is a convex quadrilateral if it satisfies all of the following conditions:

- No three vertices are collinear.
- Non-adjacent edges do not share a common point.
- Every interior angle of the quadrilateral is strictly less than 180 degrees.

Input

The input is given in the following format:

$$\begin{array}{l} N \\ x_1\ y_1 \\ x_2\ y_2 \\ \vdots \\ x_N\ y_N \end{array}$$

- All input values are integers.
- $4 \le N \le 500$
- $|x_i|, |y_i| \le 10^8$
- $(x_i, y_i) \neq (x_j, y_j)$ for $i \neq j$.

Output

Print the answer on a single line.

Examples

standard input	standard output
5 0 0 -1 0 0 -1 1 0 0 1	4
5 0 0 1 1 2 2 2 3 3 2	5
7 -1 8 11 8 -4 -2 19 12 -8 -6 7 6 -1 2	6
4 0 0 2 0 1 -1 0 1	3

Note

In the first example, you can mark four points excluding $(-1, 0)$. If you mark all points, there exists a convex quadrilateral whose vertices are four points excluding $(0, 0)$, which violates the condition.