

# Project Euler #102: Triangle containment



This problem is a programming version of [Problem 102](#) from [projecteuler.net](#)

Three distinct points are plotted at random on a Cartesian plane, for which  $-1000 \leq x, y \leq 1000$ , such that a triangle is formed.

Consider the following two triangles:

$A(-340, 495), B(-153, -910), C(835, -947)$   
 $X(-175, 41), Y(-421, -714), Z(574, -645)$

It can be verified that triangle ABC contains the origin, whereas triangle XYZ does not.

You are given co-ordinates of  $N$  "random" triangles, find the number of triangles for which the interior contains the origin.

## Input Format

First line contains an integer  $N$  i.e. number of triangles, followed by  $N$  lines each having 6 space separated integers  $(x_1, y_1, x_2, y_2, x_3, y_3)$  representing a triangle.

## Constraints

$$1 \leq N \leq 10^5$$
$$-10^6 \leq x_i, y_i \leq 10^6$$

## Output Format

Print 1 line, the number of triangles that contain origin.

## Sample Input

```
2
-1 -2 1 -2 1 3
-2 -1 -2 1 -1 2
```

## Sample Output

```
1
```