A. Arpa and an exam about geometry

Time limit: 2s Memory limit: 256 MB

Arpa is taking a geometry exam. Here is the last problem of the exam.

You are given three points a, b, c.

Find a point and an angle such that if we rotate the page around the point by the angle, the new position of a is the same as the old position of b, and the new position of b is the same as the old position of c.

Arpa is doubting if the problem has a solution or not (i.e. if there exists a point and an angle satisfying the condition). Help Arpa determine if the question has a solution or not.

Input

The only line contains six integers $a_x, a_y, b_x, b_y, c_x, c_y$ ($|a_x|, |a_y|, |b_x|, |b_y|, |c_x|, |c_y| \le 10^9$). It's guaranteed that the points are distinct.

Output

Print "Yes" if the problem has a solution, "No" otherwise.

You can print each letter in any case (upper or lower).

Examples

input
0 1 1 1 1 0
output
Yes

input
1 1 0 0 1000 1000
output
No

Note

In the first sample test, rotate the page around (0.5, 0.5) by 90°.

In the second sample test, you can't find any solution.