Problem 469: Convex Polygon

Problem Information

Difficulty: Medium
Acceptance Rate: 40.08%
Paid Only: Yes
Tags: Array, Math, Geometry

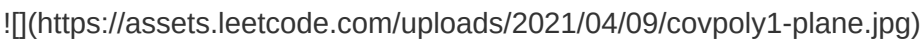
Problem Description

You are given an array of points on the **X-Y** plane `points` where `points[i] = [xi, yi]`. The points form a polygon when joined sequentially.

Return `true` if this polygon is [convex](http://en.wikipedia.org/wiki/Convex_polygon) and `false` otherwise.

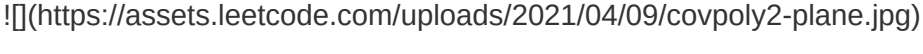
You may assume the polygon formed by given points is always a [simple polygon](http://en.wikipedia.org/wiki/Simple_polygon). In other words, we ensure that exactly two edges intersect at each vertex and that edges otherwise don't intersect each other.

Example 1:



Input: points = [[0,0],[0,5],[5,5],[5,0]] **Output:** true

Example 2:



Input: points = [[0,0],[0,10],[10,10],[10,0],[5,5]] **Output:** false

Constraints:

* `3 <= points.length <= 104` * `points[i].length == 2` * `-104 <= xi, yi <= 104` * All the given points are **unique**.

Code Snippets

C++:

```
class Solution {
public:
bool isConvex(vector<vector<int>>& points) {

}
};
```

Java:

```
class Solution {
public boolean isConvex(List<List<Integer>> points) {

}
}
```

Python3:

```
class Solution:
def isConvex(self, points: List[List[int]]) -> bool:
```