3623. Count Number of Trapezoids I

Solved

Medium Hint

You are given a 2D integer array `points`, where `points[i] = [$x_i$, $y_i$]` represents the coordinates of the `$i^{th}$` point on the Cartesian plane.

A **horizontal trapezoid** is a convex quadrilateral with **at least one pair** of horizontal sides (i.e. parallel to the x-axis). Two lines are parallel if and only if they have the same slope.

Return the *number of unique **horizontal trapezoids*** that can be formed by choosing any four distinct points from `points`.

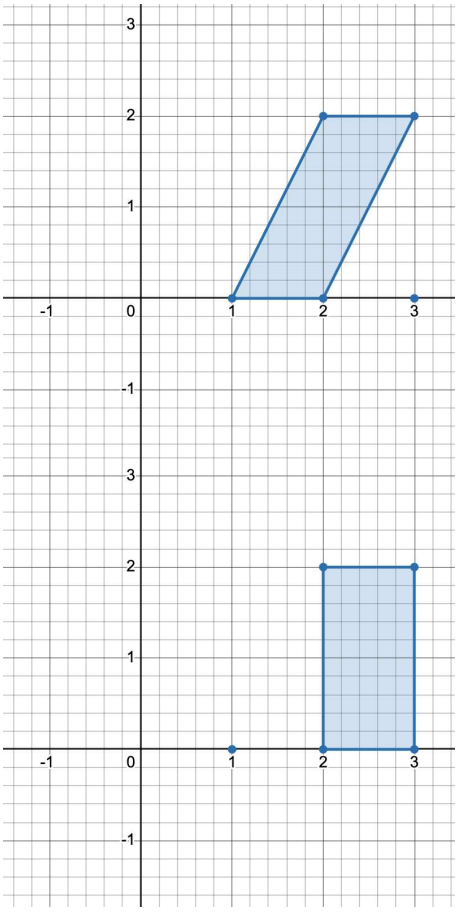
Since the answer may be very large, return it **modulo** `$10^9 + 7$`.

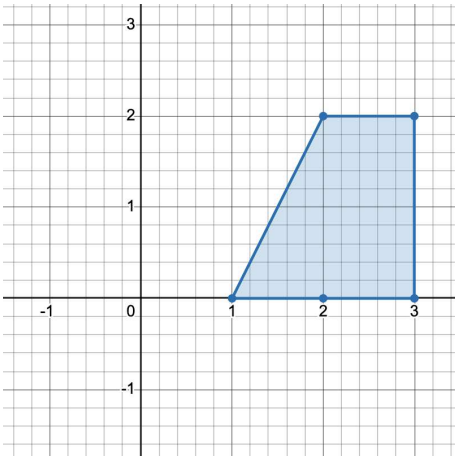
Example 1:

Input: points = [[1,0],[2,0],[3,0],[2,2],[3,2]]

Output: 3

Explanation:





There are three distinct ways to pick four points that form a horizontal trapezoid:

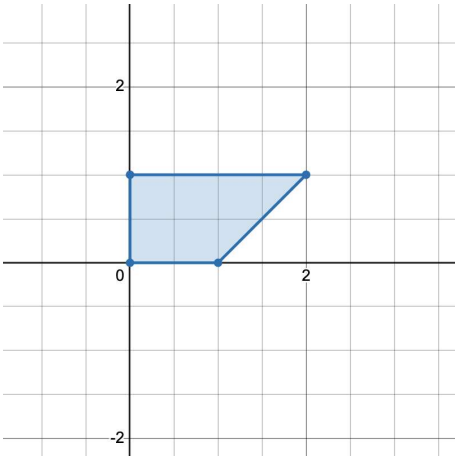
- Using points `[1,0]`, `[2,0]`, `[3,2]`, and `[2,2]`.
- Using points `[2,0]`, `[3,0]`, `[3,2]`, and `[2,2]`.
- Using points `[1,0]`, `[3,0]`, `[3,2]`, and `[2,2]`.

Example 2:

Input: points = [[0,0],[1,0],[0,1],[2,1]]

Output: 1

Explanation:



There is only one horizontal trapezoid that can be formed.

Constraints:

- `4 <= points.length <= 10^5`
- `–10^8 <= x_i, y_i <= 10^8`
- All points are pairwise distinct.

Seen this question in a real interview before? 1/5

Yes No

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Topics

Hint 1

Hint 2

Hint 3

Discussion (22)