Problem E: Edge Elimination

You are given a simple, connected, undirected, **planar** graph, consisting of n vertices and m edges. A graph is planar when it can be drawn on the plane in such a way that its edges intersect only at their endpoints.

Count the number of ways to select **exactly 3 different** edges to remove from the graph, such that the resulting graph is no longer connected.

Input

Each test contains multiple test cases. The first line contains the number of test cases t ($1 \leq t \leq 3 \cdot 10^5$). The description of the test cases follows.

The first line contains two integers n and m ($3 \leq n, m \leq 3 \cdot 10^5$) – the number of vertices and the number of edges of the graph, respectively.

The following n lines, the i-th of which contains two integers x_i and y_i ($|x_i|, |y_i| \leq 10^9$) – the coordinates of the i-th point.

The following m lines each contain two integers u and v ($1 \leq u, v \leq n$, $u \neq v$) denoting an edge connecting vertices u and v.

It is guaranteed that:

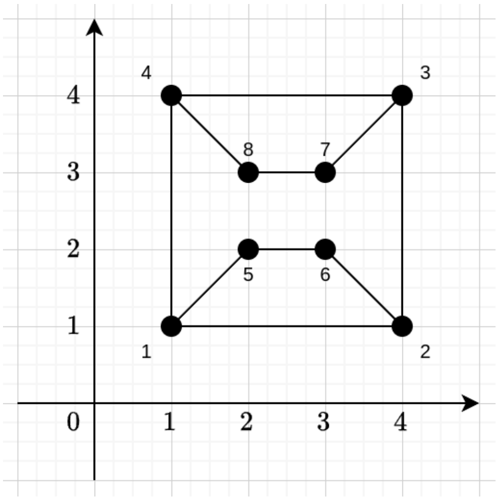
- the graph is connected,
- no two points have the same coordinates,
- no two edges intersect each other except at their common endpoints (if any),
- for each pair of the given points, there is at most one edge connecting them,
- the sum of n over all test cases does not exceed $3 \cdot 10^5$,
- the sum of m over all test cases does not exceed $3 \cdot 10^5$.

Output

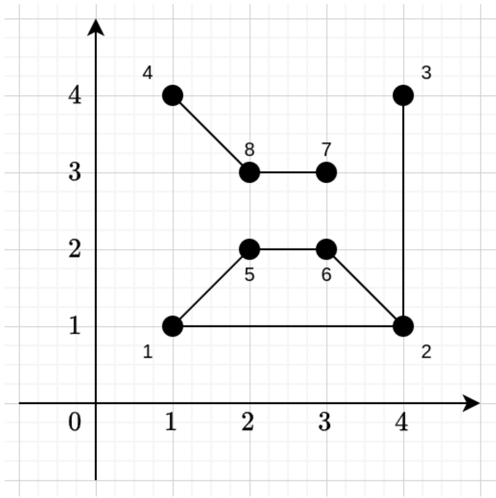
For each test case, output a single integer denoting the number of ways to select exactly 3 edges to disconnect the graph.

Sample Explanation

The following images depict the graph given in the sample test case:



The original graph



One possible way to disconnect the graph: select edges 3, 4, and 9.

Sample Input 1	Sample Output 1
1 8 10 1 1 4 1 4 4 1 4 2 2 3 2 3 3 2 3 1 2 2 3 3 4 4 1 5 6 7 8 1 5 2 6 3 7 4 8	64