Middle Point Graph

Input file:	`standard input`
Output file:	`standard output`
Time limit:	5 seconds
Memory limit:	256 megabytes

You're given a simple connected undirected graph with n vertices and m edges.

For each vertex, we assign it a random point (x_i, y_i, z_i), where x_i, y_i, z_i are independent uniform random real numbers in $[0, 1]$.

For each edge, its coordinate is defined as the middle point of its two ends' coordinates. The middle point of (a, b, c) and (x, y, z) is $(\frac{a+x}{2}, \frac{b+y}{2}, \frac{c+z}{2})$.

Among these $n + m$ points, you are to find the expected number of ways to choose 4 coplanar distinct points. Print the answer modulo $10^9 + 7$.

Input

The first line contains a positive integer T $(1 \leq T \leq 10^4)$, denoting the number of test cases.

For each testcase:

- The first line contains two integers n, m, $(1 \leq n \leq 2 \cdot 10^5, n - 1 \leq m \leq 5 \cdot 10^5)$ denoting the number of vertices and edges.
- The next m lines each contains two integers u, v $(1 \leq u, v \leq n)$, denoting an edge connecting u and v.

It is guaranteed that $\sum n \leq 2 \cdot 10^5$, $\sum m \leq 5 \cdot 10^5$.

An empty line is placed before each testcase for better readability.

Output

For each testcase, output one line containing a single integer denoting the answer module $10^9 + 7$.

Example

standard input	standard output
3 7 18 2 1 2 3 3 4 2 5 6 4 7 5 6 5 3 1 1 5 1 7 7 3 2 6 2 7 4 5 5 3 4 2 6 7 6 3 5 7 1 2 2 3 4 2 5 1 1 4 3 5 3 1 1 0	593 88 0