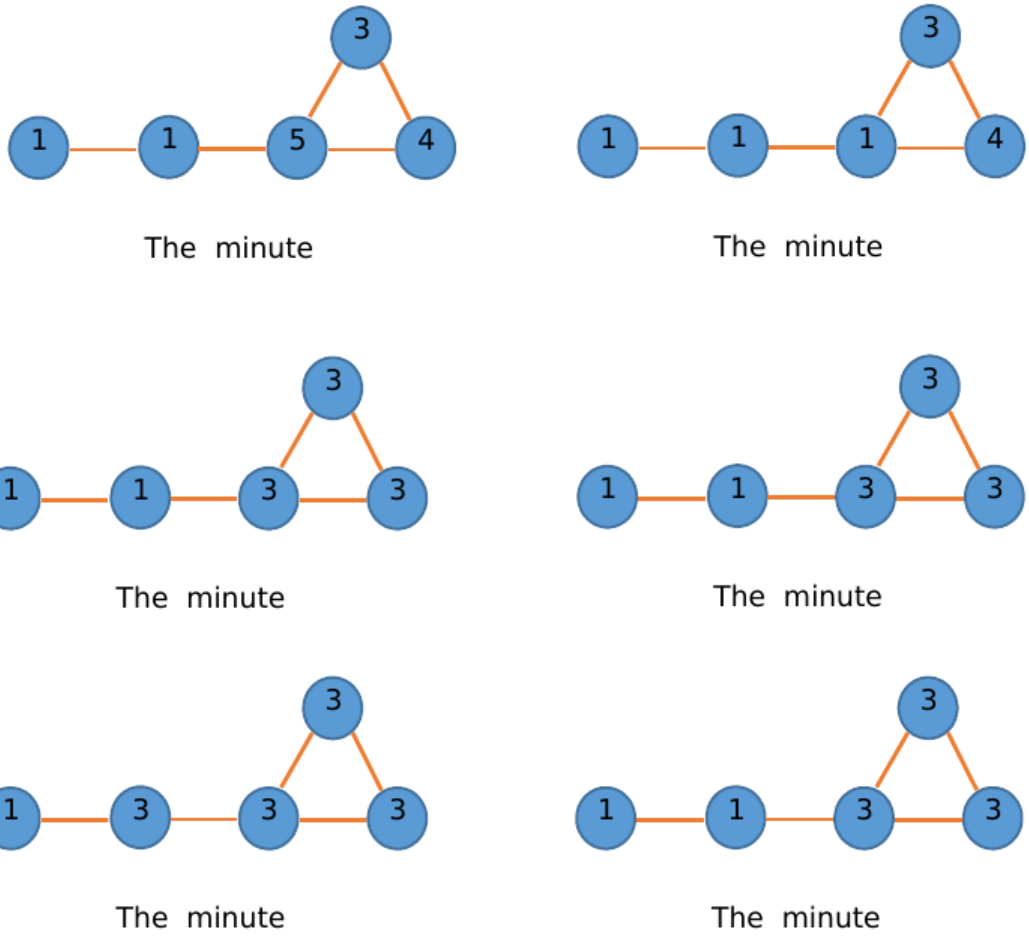
8176 Colored Nodes

There are N colored nodes, numbered from 1 to N. Initially, the color of *Node* i is "¿¿". There are M edges between some pairs of nodes.

At the beginning of the $(i + kN)$-th minute, the colors of the nodes that adjacent to *Node* i will be set to the same color as *Node* i, where k is a non-negative integer.

The following pictures are examples.



At the beginning of the 1st minute, the color of *Node 2* is set to 1.
At the beginning of the 2nd minute, the color of *Node 1* and 5 is set to 1.
At the beginning of the 3rd minute, the color of *Node 4* and 5 is set to 3.
At the beginning of the 4th minute, the color of *Node 3* and 5 is set to 3.
At the beginning of the 5th minute, the color of *Node 2*, 3 and 4 is set to 3.
At the beginning of the 6th minute, the color of *Node 2*, set to 1.
...

Assume the number of nodes that are color i during the j-th minute is $D(i, j)$. And assume

$$F(i) = \lim_{n \to \infty} \frac{1}{n} \sum_{j=1}^{n} D(i, j)$$

Your task is to calculate $F(i)$ for all i range from 1 to N.

Input

The input consists of multiple test cases. (Up to 20)

For each test case:

The first line contains two integers N and M, indicating the number of nodes and the number of edges. ($1 \leq N, M \leq 10^5$)

M lines follow, each line contains two integers a and b, indicating that there is an edge between *Node* a and *Node* b. ($1 \leq a, b \leq N$)

Output

For each test case, output all $F(i)$ that satisfy $F(i) \neq 0$, rounded to six decimal places and sorted in descending order.

Sample Input

```
5 5
1 2
2 5
3 4
4 5
3 5
5 4
1 2
2 5
5 4
4 3
```

Sample Output

```
3.000000
2.000000
2.800000
2.200000
```