Problem D. City Brain

Input file:	*standard input*
Output file:	*standard output*
Time limit:	4 seconds
Memory limit:	1024 mebibytes

Prof. Pang works for the City Brain program of Capital Grancel. The road network of Grancel can be represented by an undirected graph. Initially, the speed limit on each road is 1m/s. Prof. Pang can increase the speed limit on a road by 1m/s with the cost of 1 dollar. Prof. Pang has k dollars. He can spend any nonnegative integral amount of money on each road. If the speed limit on some road is am/s, it takes $1/a$ seconds for anyone to go through the road in either direction.

After Prof. Pang spent his money, Prof. Du starts to travel from city s_1 to city t_1 and Prof. Wo starts to travel from city s_2 to city t_2. Help Prof. Pang to spend his money wisely to minimize the sum of minimum time of Prof. Du's travel and Prof. Wo's travel. It is guaranteed that s_1 and t_1 are connected by at least one path and that s_2 and t_2 are connected by at least one path.

Input

The first line contains three integers n, m, k ($1 \le n \le 5000$, $0 \le m \le 5000$, $0 \le k \le 10^9$) separated by single spaces denoting the number of vertices, the number of edges in the graph and the number of dollars Prof. Pang has.

Each of the following m lines contains two integers a, b ($1 \le a, b \le n, a \ne b$) separated by a single space denoting the two endpoints of one road. There can be multiple roads between the same pair of cities.

The following line contains four integers s_1, t_1, s_2, t_2 ($1 \le s_1, t_1, s_2, t_2 \le n$) separated by single spaces denoting the starting vertices and ending vertices of Prof. Du and Prof. Wo's travels.

Output

Output one decimal in the only line – the minimum sum of Prof. Du's travel time and Prof. Wo's travel time. The answer will be considered correct if its absolute or relative error does not exceed 10^{-9}.

Examples

standard input	standard output
6 5 1 1 2 3 2 2 4 4 5 4 6 1 5 3 6	5.000000000000
1 0 100 1 1 1 1	0.000000000000
4 2 3 1 2 3 4 1 2 3 4	0.833333333333