D. Broken robot

time limit per test: 2 seconds
memory limit per test: 256 megabytes
input: standard input
output: standard output

You received as a gift a very clever robot walking on a rectangular board. Unfortunately, you understood that it is broken and behaves rather strangely (randomly). The board consists of N rows and M columns of cells. The robot is initially at some cell on the i-th row and the j-th column. Then at every step the robot could go to some another cell. The aim is to go to the bottommost (N-th) row. The robot can stay at it's current cell, move to the left, move to the right, or move to the cell below the current. If the robot is in the leftmost column it cannot move to the left, and if it is in the rightmost column it cannot move to the right. At every step all possible moves are equally probable. Return the expected number of step to reach the bottommost row.

Input

On the first line you will be given two space separated integers N and M ($1 \leq N, M \leq 1000$). On the second line you will be given another two space separated integers i and j ($1 \leq i \leq N, 1 \leq j \leq M$) — the number of the initial row and the number of the initial column. Note that, $(1, 1)$ is the upper left corner of the board and (N, M) is the bottom right corner.

Output

Output the expected number of steps on a line of itself with at least 4 digits after the decimal point.

Examples

input
10 10 10 4
output
0.0000000000

input
10 14 5 14
output
18.0038068653

Codeforces Beta Round #24

Finished

Practice

⭐

→ **Virtual participation**

Virtual contest is a way to take part in past contest, as close as possible to participation on time. It is supported only ACM-ICPC mode for virtual contests. If you've seen these problems, a virtual contest is not for you - solve these problems in the archive. If you just want to solve some problem from a contest, a virtual contest is not for you - solve this problem in the archive. Never use someone else's code, read the tutorials or communicate with other person during a virtual contest.

Start virtual contest

→ **Submit?**

Language: GNU G++11 5.1.0

Choose file: 浏览…

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dp   probabilities

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