Project Euler #197: Investigating the behaviour of a recursively defined sequence

This problem is a programming version of Problem 197 from projecteuler.net

Given is the function $f(x) = [2^{b-x^2}] \times 10^{-9}$ ($[]$ is the floor-function), the sequence u_n is defined by u_0 and $u_{n+1} = f(u_n)$.

Find $u_n + u_{n+1}$ for $n = 10^{12}$ with given u_0 and b. Your answer would be considered correct if it has absolute error not more than 10^{-8}.

Input Format

Every test file contains two real numbers: u_0 and b with no more than two digits after decimal point. These numbers are situated in a single line and are separated by a single space.

Constraints

- $28 \leq b \leq 32$
- $0 \leq u_0 \leq 10$

Output Format

Output exactly one real number which is the answer to the problem.

Sample Input 0

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0 30
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Sample Output 0

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1.473849410
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