Problem A: Amazing Function
Time Limit: 5 seconds

Description

The function **F(n)** is defined as:

$F(0) = 2^{0.5} + 3^{0.5} + 6^{0.5}$
$F(n) = (F(n-1)^2 - 5) / (2 * F(n-1) + 4)$

Given **N**, find **F(N)**. Note that **N** can be very large!

Input

A number of of inputs (≤**1000**), each start with the number of value of integer **N** ($0 \le N \le 10^{1500}$).

Output

Output **F(N)**, rounded to exactly 10 digits after the decimal.

Sample Input
0
1

Sample Output
5.5957541127
1.7320508076