Problem C. Cup of Water

Input file:	`standard input`
Output file:	`standard output`
Time limit:	1 second
Memory limit:	256 megabytes

There is an empty cup, and a dumb robot is going to fill it with 1 liter of water.

For every turn, the robot will randomly select a real number t between 0 and x (x is a given number) and then fill the cup with t liter of water. The robot will repeat it until the cup is full (at least 1 liter of water has been filled).

You need to answer the expected number of turns the robot should fill.

Input

The first line contains an integer T ($T \leq 10000$), denoting the number of test cases.

In the following T lines, each line contains a real number x ($0.05 \leq x \leq 10^9$), describing a test case.

It is guaranteed that x contains no more than 3 decimal places.

Output

For each test case, output one line with a real number, denoting the expected number of turns.

Any answer with a relative or absolute error less than 10^{-4} will be accepted.

Example

standard input	standard output
2 0.3 1.5	7.3332227396 1.9477340411