

Problem D. Do You Like Interactive Problems?

Input file: `standard input`
Output file: `standard output`
Time limit: 1 second
Memory limit: 512 megabytes

There is an integer x satisfying $1 \leq x \leq n$. You know n but you don't know x .

You can do the following guessing: pick an random integer y uniformly satisfying $1 \leq y \leq n$ (your y may equal to previous queries), and you will be told if $x < y$, $x > y$ or $x = y$. You will stop asking if there is only one possible x satisfying all the conditions.

Given n , if x is picked randomly uniformly, what's your expected number of queries?

Input

The first line contains an integer T ($1 \leq T \leq 100$) denoting the number of test cases.

For each test case, the only line contains an integer n ($1 \leq n \leq 10^9$).

Output

For each test case, output one integer denoting the expected number of queries modulo 998244353.

Formally, it can be proven that the sought expected value can be represented as an irreducible fraction p/q which satisfies $q \not\equiv 0 \pmod{998244353}$, and there is a unique integer r satisfies $0 \leq r < 998244353$ and $qr \equiv p \pmod{998244353}$. Find this r .

Example

standard input	standard output
2	0
1	1
2	