Pseudo-dichotomic search P60373_en

Consider a hidden vector V with n integer numbers in strictly increasing order. Given an integer x that belongs to V, you will play a game to guess the position j where $V[j] = x$. You have to use a "black box" B, with parameters x and a position i inside V. If there is a $j \in \{i-1, i, i+1\}$ such that $V[j] = x$, you win the game. Otherwise, B will tell you whether $x < V[i-1]$ or $x > V[i+1]$.

Given n, what is the minimum number of calls to B to win the game?

Input

Input consists of several cases, each one with an n between 1 and 10^{18}.

Output

For every n, print the worst-case number of calls to B to win the game, assuming a strategy that minimizes that worst-case cost.

Sample input 1

```
1
2
4
9
10
1000000000000000
```

Sample output 1

```
1
1
2
2
3
49
```

Problem information

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Generation: 2026-01-25T11:06:01.501Z