DWITE '09 R3 #2 - Rounding to Fibonacci

Time limit: 2.0s **Memory limit:** 64M

DWITE Online Computer Programming Contest, December 2009, Problem 2

There are a few different rounding methods. The most common one rounds up/down from 5. Another one rounds up/down depending on the number being even or odd (this has to do with statistical bias). Here we'll implement yet another type of rounding — rounding a number to the closest whole integer in the Fibonacci sequence. *If two elements in the sequence are equally far away,* **round up**.

The Fibonacci sequence is defined as:

- $F(0) = 0$
- $F(1) = 1$
- $F(n) = F(n-1) + F(n-2)$

Which produces a sequence of: $0, 1, 1, 2, 3, 5, 8, 13, 21, 34, \ldots$

The input will contain 5 lines, integers $0 \leq N \leq 1\,000\,000\,000$.

The output will contain 5 lines, each a corresponding integer rounded to the closest number from the Fibonacci sequence.

Sample Input

```
1
2
4
22
1000000000
```

Sample Output

```
1
2
5
21
1134903170
```

Problem Resource: DWITE