Problem 8 – Wandering Mind

Professor Plums likes recursion, but his students typically find it confusing. During a recent faculty meeting his mind wandered, and he invented the following recursive mathematical function, F(n):

$F(n) = n$ for all value of $n \leq -3$

$F(n) = 2n$ for all value of $-3 < n < 3$

$F(n) = F(n-6) + F(n-4) + F(n-1)$ for all values of $n \geq 3$.

He wants you to write a program to compute values of the function F(n).

Input

The first line contains the number of n values to run through the function F(n). Each of the following lines contain a single integer value of n. All of the values of n and corresponding F(n) values will fit into a 64-bit signed integer. The below sample input contains three n values.

```
3
5
9
-8
```

Output

For each n value, print to standard output a case label and the value of F(n) as defined above. For the example input given above, the output is:

```
Case 1: -5
Case 2: -7
Case 3: -8
```