Problem MOVINGTARGET: Moving Target

Q always creates fancy gadgets, which then will be used by James Bond either to spy, to chase or even to kill his enemies (but times are over where Q creates bombs in pens). To be honest, Q does not do all the work on his own, he rather presents *your* work. So Q has a new job for you: you should create a program that keeps track of a moving target.

All you know is that the target moves according to a polynomial with degree three (or less). You observe the target for some time and write down its coordinate at time stamp 0, 1, 2, and 3. Can you compute the target's coordinate at time stamp t with that information?

Input

The first line contains the number of test cases C ($1 \leq C \leq 100$). Each case is specified in a single line with five values that give the coordinate of the target at the times 0, 1, 2, and 3 followed by the time stamp t. Both the coordinates and the time stamp are non-negative integers not larger than 15 000.

Output

For each test case, print one line containing the coordinate of the target at time stamp t.

Another team inside Q's section already has proven that the result is always an integer and the absolute value is smaller than 2^{58} (thus, use a 64-bit integer data type for your calculations such as `long long` in C/C++ or `long` in Java).

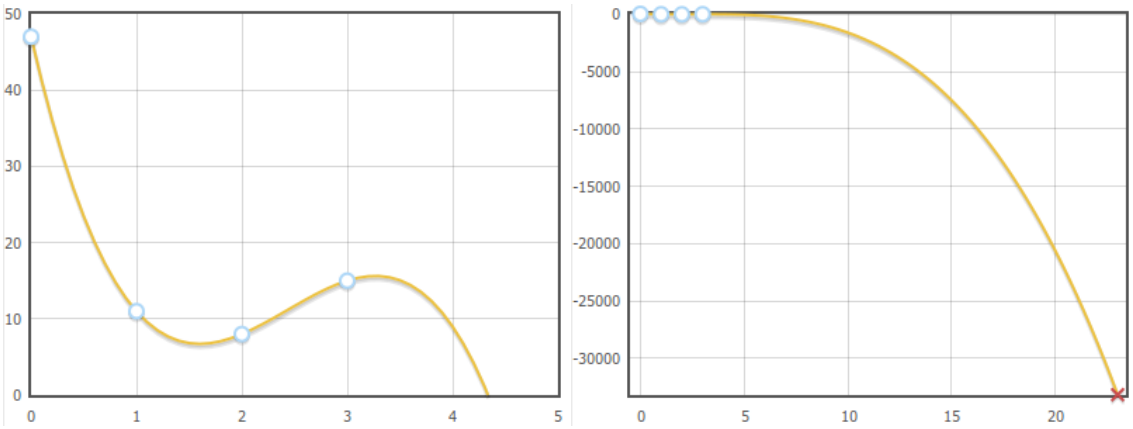

Figure 1: Illustration of the last polynomial in the sample: $-\frac{23}{6}t^3 + 28t^2 - 60\frac{1}{6}t + 47$. The first three sample cases describe the polynomials $7407\frac{1}{3}t^3 - 33333t^2 + 37036\frac{2}{3}t$, $t^3 + t^2 + t$, and $41t^2 + 1$.

Sample Input 1

```
4
0 11111 0 11111 11111
0 3 14 39 4
1 42 165 370 10
47 11 8 15 23
```

Sample Output 1

```
10156531557679871
84
4101
-33165
```