1070 – Algebraic Problem

Given the value of **a+b** and **ab** you will have to find the value of $\mathbf{a^n+b^n}$. **a** and **b** not necessarily have to be real numbers.

Input

Input starts with an integer **T (≤ 10000)**, denoting the number of test cases.

Each case contains three non-negative integers, **p, q** and **n**. Here **p** denotes the value of **a+b** and **q** denotes the value of **ab**. Each number in the input file fits in a signed 32-bit integer. There will be no such input so that you have to find the value of $\mathbf{0^0}$.

Output

For each test case, print the case number and $\mathbf{(a^n+b^n)}$ modulo $\mathbf{2^{64}}$.

Sample Input	Output for Sample Input
2 10 16 2 7 12 3	Case 1: 68 Case 2: 91