

1070 – Algebraic Problem

Given the value of $a+b$ and ab you will have to find the value of 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 0^0 .

Output

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

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