Little Panda Power

Little Panda has a thing for powers and modulus and he likes challenges. His friend **Lucy**, however, is impractical and challenges **Panda** to find both positive and negative powers of a number modulo a particular number. We all know that $A^{-1} \bmod X$ refers to the modular inverse of A modulo X (see Wikipedia).

Since **Lucy** is impractical, she says that $A^{-n} \bmod X = (A^{-1} \bmod X)^n \bmod X$ for $n > 0$.

Now she wants **Panda** to compute $A^B \bmod X$.

She also thinks that this problem can be very difficult if the constraints aren't given properly. **Little Panda** is very confused and leaves the problem to the worthy programmers of the world. Help him in finding the solution.

Input Format
The first line contains T, the number of test cases.
Then T lines follow, each line containing A, B and X.

Output Format
Output the value of $A^B \bmod X$.

Constraints
$1 \leq T \leq 1000$
$1 \leq A \leq 10^6$
$-10^6 \leq B \leq 10^6$
$1 \leq X \leq 10^6$
A and X are coprime to each other (see Wikipedia)

Sample Input

```
3
1 2 3
3 4 2
4 -1 5
```

Sample Output

```
1
1
4
```

Explanation
Case 1: $1^2 \bmod 3 = 1 \bmod 3 = 1$
Case 2: $3^4 \bmod 2 = 81 \bmod 2 = 1$
Case 3: $4^{-1} \bmod 5 = 4$