Signed Binary Number

In mathematics, positive numbers (including zero) are represented as unsigned numbers. That is we do not put the '+' sign in front of them to show that they are positive numbers.

However, when dealing with negative numbers we do use a '-' sign in front of the number to show that the number is negative in value and different from a positive unsigned value, and the same is true with signed binary numbers.

The digit in signed binary number only consist of {1, 0, (-1)}
For example, 1000(-1) = $2^4 - 2^0 = 15$.
Given a string of signed binary number, output the decimal representation of the number.

Format Input
The input begins with an integer T indicating the number of test cases. In each test case, there is string S, indicating signed binary representation of the number.

Format Output
For each test case, output the decimal representation of the number.

Constraints
1 <= T <= 10
1 <= |s| <= 32

Sample Input	Sample Output
2 1000(-1) 1(-1)000	Case #1: 15 Case #2: 8

Explanation:
Case 2:
1(-1)000 = $2^4 - 2^3 = 8$