Problem #7: Poly's Nomials

Program Name: poly.java Input File: poly.dat

Poly is great at programming and good at math. One of her friends is good at neither and has lots of algebra homework that Poly has to help her with. In order to give herself some free time from her needy friend, Poly has decided to write a program that will put polynomials in canonical form. They are input with the terms out of order, and her program orders the terms and displays the resulting polynomial. Hopefully Poly's friend can figure out how to run it!

For this problem, the standard form of a polynomial is:

```
[-] Ax^9 +/- Bx^8... +/- Hx^2 +/- Ix +/- J
```

A-J are integer coefficients ranging from -1000 to 1000, and the +/− indicates the sign of the coefficient.
For example:

```
- 2x^9 + x^8 - 1
```

or

```
1000x^9 - x^3
```

If a coefficient is 1 or -1 the number itself is omitted unless it is used in the constant term. (e.g., "`- x^9`" and "`- 1`" are valid terms, but "`- 1x^9`" is not).
Terms appear in descending order by exponents of x, with 9 being the maximum exponent.
Exponents are only displayed if they are greater than 1. (i.e., "`5x^1`" is incorrect, but "`5x`" is correct)
Many terms may have a coefficient of zero (and are not shown), but there will be at least one term with a non-zero coefficient in every polynomial.
At most one term of each degree will be given in any one polynomial (i.e., at most one with x^9, at most one with x^8, etc.)
There are single spaces separating the + and – operators from the terms.
The leading term will only have an operator displayed if its coefficient is negative (i.e., a + is otherwise implied)

Input

The first line indicates the number of polynomials to be converted. Each subsequent line contains one polynomial.

Output

For each polynomial in the input, output the polynomial in standard form on its own line.

Example Input File

```
3
7 + 4x^8 - 34x^2 - x
x^8
- 17 + x^8 - 9x^7 - 243x^9 - x^5
```

Example Output To Screen

```
4x^8 - 34x^2 - x + 7
x^8
- 243x^9 + x^8 - 9x^7 - x^5 - 17
```