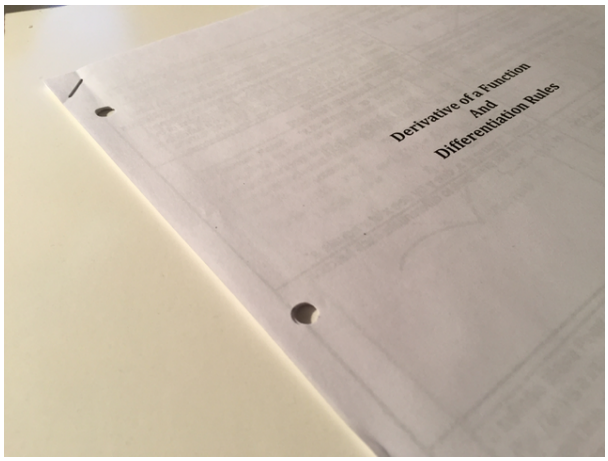
TLE '16 Contest 7 P1 - Math Helper

Time limit: 2.0s **Memory limit:** 256M

While the CS nerd is preparing for various computing competitions, the girl approaches him! She gives him some calculus homework and asks him to ~~do it for her~~ help her complete it. Not wanting to waste a valuable opportunity, the CS nerd agrees to help.



A stapled package on simple derivatives - with lots of practice!

The girl takes out a *large stapled package of paper* with many simple calculus problems. Her task is to take the derivative of each equation on the sheet.

Each equation is in the form `y = ax^b`, where a and b are given integers. The derivative of this equation (more accurately, the derivative of y with respect to x) is `y' = abx^(b-1)`. The derivative should also be as simplified as possible. In particular, all these rules must be satisfied:

- `0x^n` should be simplified to `0`
- `kx^0` should be simplified to `k`
- `1x^n` where $n \neq 0, 1$ should be simplified to `x^n`
- `-1x^n` where $n \neq 0, 1$ should be simplified to `-x^n`
- `kx^1` where $k \neq 0, 1, -1$ should be simplified to `kx`
- `1x^1` should be simplified to `x`
- `-1x^1` should be simplified to `-x`
- `kx^-n` where $n > 0$ should not be in fraction form (i.e. it should not be `k/(x^n)`)

A given equation may be in its simplified form as described above.

There are T problems on the worksheet. Can you help the CS nerd finish this tedious homework?

Input Specification

The first line will contain a single integer, T $(1 \leq T \leq 10^5)$, the number of problems.

The next T lines of input each contain an equation in the form `y = ax^b`, which could be in a more simplified form, but not completely simplified. It is guaranteed that $|ab| \leq 10^9$ and $-10^9 \leq a, b \leq 10^9$.

Output Specification

For each of the T equations, output the derivative on a separate line.

Sample Input

```
7
y = x^5
y = 2x^2
y = 100
y = -3x^-2
y = 5x
y = -x^10
y = 0x^0
```

Sample Output

```
y' = 5x^4
y' = 4x
y' = 0
y' = 6x^-3
y' = 5
y' = -10x^9
y' = 0
```