

Plotting functions

Given a function $y=f(x)$ plot it with stars (*) and then (!) its derivation with crosses (+) for $0 \leq x \leq 20$ with $\Delta x=1$ in a diagram with 21×21 points ($0 \leq x, y \leq 20$). Empty fields are marked with dots (.). For plotting the real number y should be rounded to integer ($-0.5 \rightarrow -1$, $-0.4 \rightarrow 0$, $0.4 \rightarrow 0$, $0.5 \rightarrow 1$).

The function and its derivation are continuous between 0 and 20.

The function definition uses only the following characters: 0123456789x.+*/()

'**' means 'power of'.

See also [this similar task](#).

Input

In the first line the number N of functions, then N lines with one function.

Output

The plot of each function and its derivation in 21 lines.

Example

Input:

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2
x
20/(x+1)
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Output:

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