Pikard

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Time limit: X seconds
Memory limit: 256mb

Problem

You are given a first-order differential equation of the form $y' = f(t, y)$. Your task is to find the value of its kth approximation y_k at the specified point

Input

The first line of the input contains a differential equation in the format $y' = f(t, y)$. The equation can contain sin, cos, exp and degree functions (sympy format).

The second line contains an integer $1 <= k <= 10$ - the iteration number for which you need to find the approximation value at the point.

The third line contains two computable expressions t_0 and y_0 (sympy format) - the initial condition for solving the Cauchy problem.

The fourth line contains a computable expression t_k (sympy format) - the point where you need to find the value of the kth approximation.

It is guaranteed that it is possible to find Picard approximations for a given differential equation in elementary functions.

Output

The only real number $x = y_k(t_k)$, $-10^{12} <= x <= 10^{12}$. The answer will be correct with an error of no more than 8 decimal places

Samples

picard.in	picard.out
$y' = t**3 + 5 * y * sin(2 * t)$ 5 pi 1 3*pi	7125.421055131611
$y' = t * y * (216 * t**2 - 1) + 3 * exp(8 * t)$ 3 2 5 1	-694570194783.7665