SAMPLE RUN - 2:

Input:

4

$x1 \quad x2 \quad x3 \quad x4$

8 2 1 5

$x1 * cos(x1 * x2) - x1 * x2 * log(x2)/x3 + exp(x1 * x2 - x3)$

$log(x1) * cos(x1 * x2) + x2 * sin(x1 + x2)/x3 + exp(x1 * x2 - x3)$

$x1 * x2 * log(x2)/x3 + exp(x1 * x2 - x3) - log(x4) * cos(x1 * x2)$

$(x1 + x2 + x3 + x4) * (x1 + x2) \wedge 4$

Output:

6538037.0074	26152143.8604	−3269006.2821	0.0000
6538034.1444	26152141.5470	−3269016.2844	0.0000
6538035.2045	26152148.8181	−3269028.4628	0.1915
74000.0000	74000.0000	10000.0000	10000.0000

SAMPLE RUN - 3:

Input:

3

$x1 \quad x2 \quad x3$

$1 \quad -2 \quad pi/3$

$2 * x1 + 3 * x2 \wedge 2 - sin(x3)$

$3 * x1 - cos(x2 * x3) - 1.5$

$exp(-x1 * x2) + 3 * x3$

Output:

2.0000	−12.0000	−0.5000
3.0000	−0.9069	1.7321
14.7781	−7.3891	3.0000

SAMPLE RUN - 4:

Input:

1

$x1$

$pi/4$

$sin(x1) * cos(x1) + (x1 \wedge 3) * sin(2 * x1)$

Output:

1.8506

SAMPLE RUN - 5 (Only for those who choose manual checking):

Let $f_i = f_i(x_1, x_2, \cdots, x_n)$ n-variable functions defined as

$$f_i = x_i + \prod_{k=1, k \neq i}^{n} x_k \qquad 1 \leq i \leq n$$

For $n = 50$, Find Jacobian Matrix J at $(1, 2, 3, \cdots, 50)$.

Note: Sample runs from 1 to 4 are for both manual checking and automatic checking. Choose pi = 3.14159 in input.