IOICamp Sequence

Let's say we have 4 N-elements sequences of real numbers: A[], B[], C[], D[] .
Funtion F(i, j) is defined: $F(i, j) = |A_i - A_j| + |B_i - B_j| + |C_i - C_j| + |D_i - D_j|$ $(1 \le i, j \le N)$.
Your task is very easy: you have to find the maximum of F(i, j).

Input

The first line: N ($N \le 100000$).
Following are N lines: the i-th line contains four real numbers A_i, B_i, C_i, D_i. ($-10^9 \le A_i, B_i, C_i, D_i \le 10^9$)

Output

Only one line is the maximum of F(i, j).
(The result takes exactly 3 decimal places)

Example

Input:
2
1.0 1.0 2.0 0.5
1.0 1.0 0.5 2.0

Output:
3.000