

IOICamp Sequence

Let's say we have 4 N-elements sequences of real numbers: $A[]$, $B[]$, $C[]$, $D[]$.

Function $F(i, j)$ is defined: $F(i, j) = |A_i - A_j| + |B_i - B_j| + |C_i - C_j| + |D_i - D_j|$ ($1 \leq i, j \leq N$).

Your task is very easy: you have to find the maximum of $F(i, j)$.

Input

The first line: N ($N \leq 100000$).

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

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