(x_1, y_1) (x_2, y_2) (x_3, y_3) (x_4, y_4)

i j

For (x_i, y_i), we want to find

a (x_j, y_j) s.t. $\max_{j>i} y_j + y_i + x_j - x_j$

because (x_i, y_i) is fixed

$\arg\max_{j>i} y_j + \cancel{y_i} + x_j - \cancel{x_i}$ ignore

$\equiv \arg\max_{j>i} y_j + x_j$

In the deque: we store $(y_j + x_j, x_j)$

We can also solve this by fixing j

i.e.

(x_1, y_1) (x_2, y_2) (x_3, y_3) ---

For a fixed j, find

$$\max_{i<j} y_j + y_i + x_j - x_i$$

because $y_j + x_j$ is fixed, and we don't want to put it into the data structure (it will force us to recompute $y_j + y_i + x_j - x_i$ everytime

We only consider $\max_{i \le j} y_i - x_i$

By this when we move j to the right we don't have to recompute again!