Lower bound for Delaunay

Delaunay can be used to sort numbers

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Take an instance of sort

Assume one can compute Delaunay in $\mathbb{R}^2$

Use Delaunay to solve this instance of sort

Lower bound for Delaunay

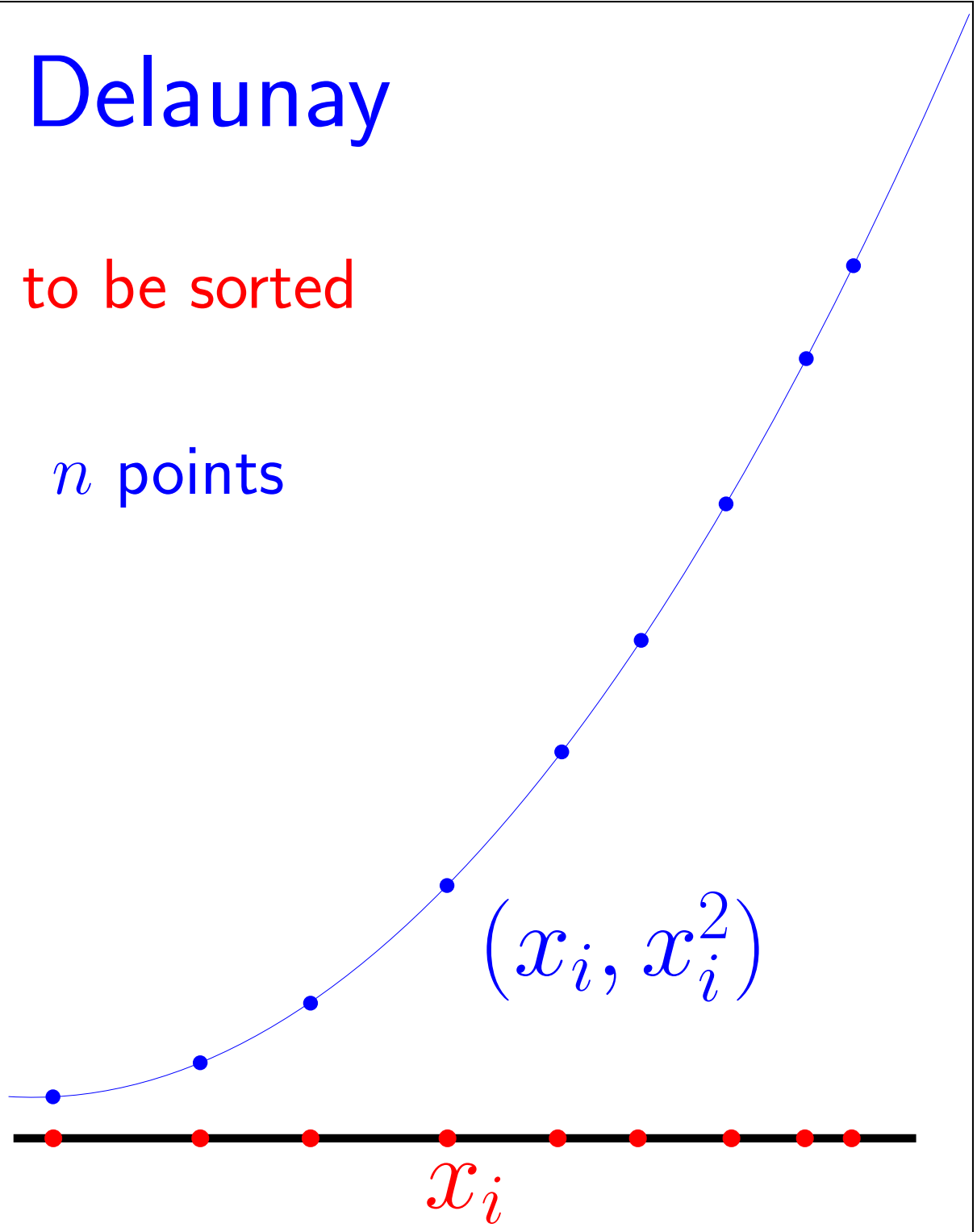
Let $x_1, x_2, \ldots, x_n \in \mathbb{R}$, to be sorted



Lower bound for Delaunay

Let $x_1, x_2, \ldots, x_n \in \mathbb{R}$, to be sorted

$(x_1, x_1^2), \ldots, (x_n, x_n^2)$ n points



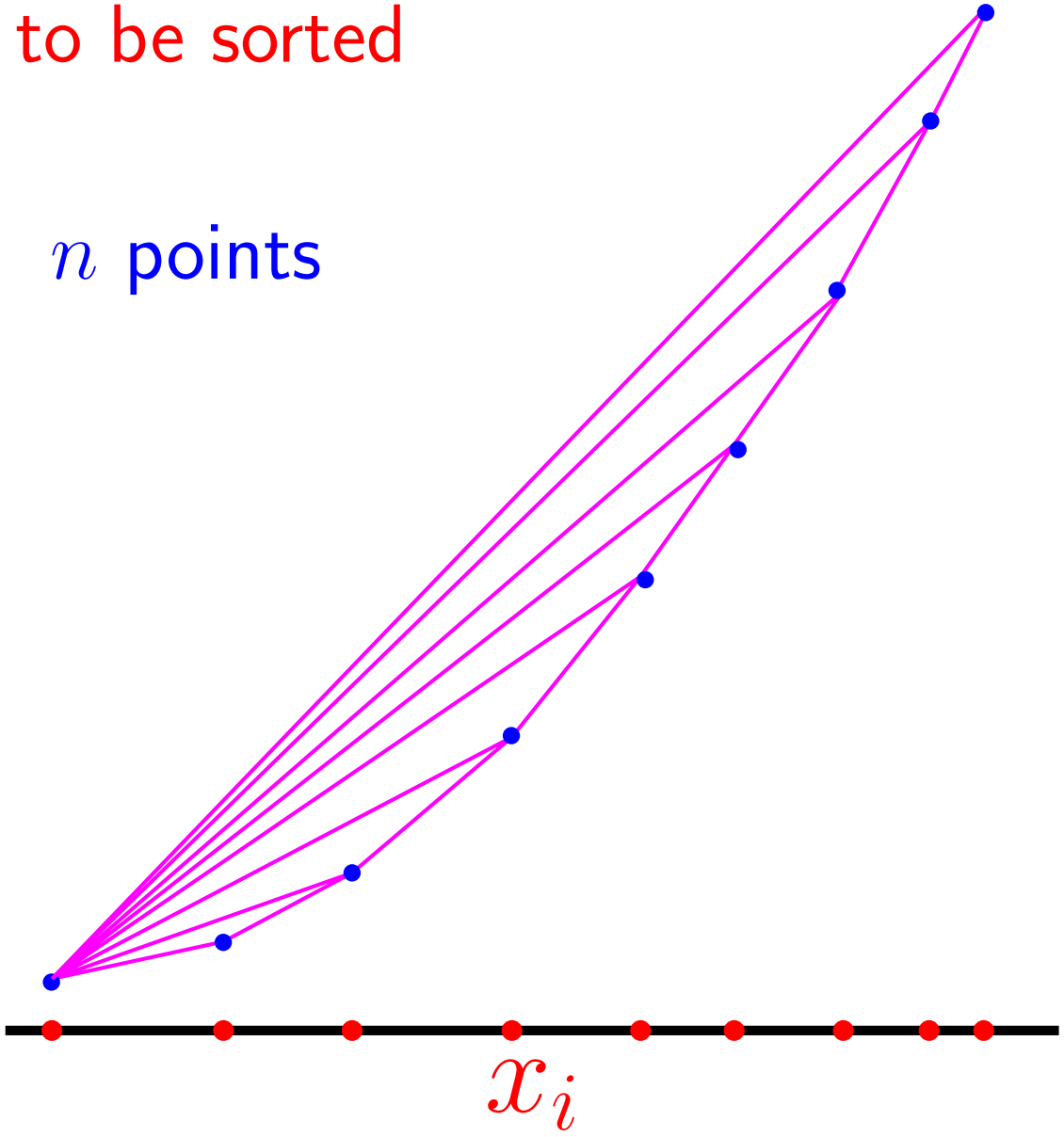
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Delaunay

$\longrightarrow$ order in x



Lower bound for Delaunay

Let $x_1, x_2, \ldots, x_n \in \mathbb{R}$, to be sorted

$\downarrow O(n)$

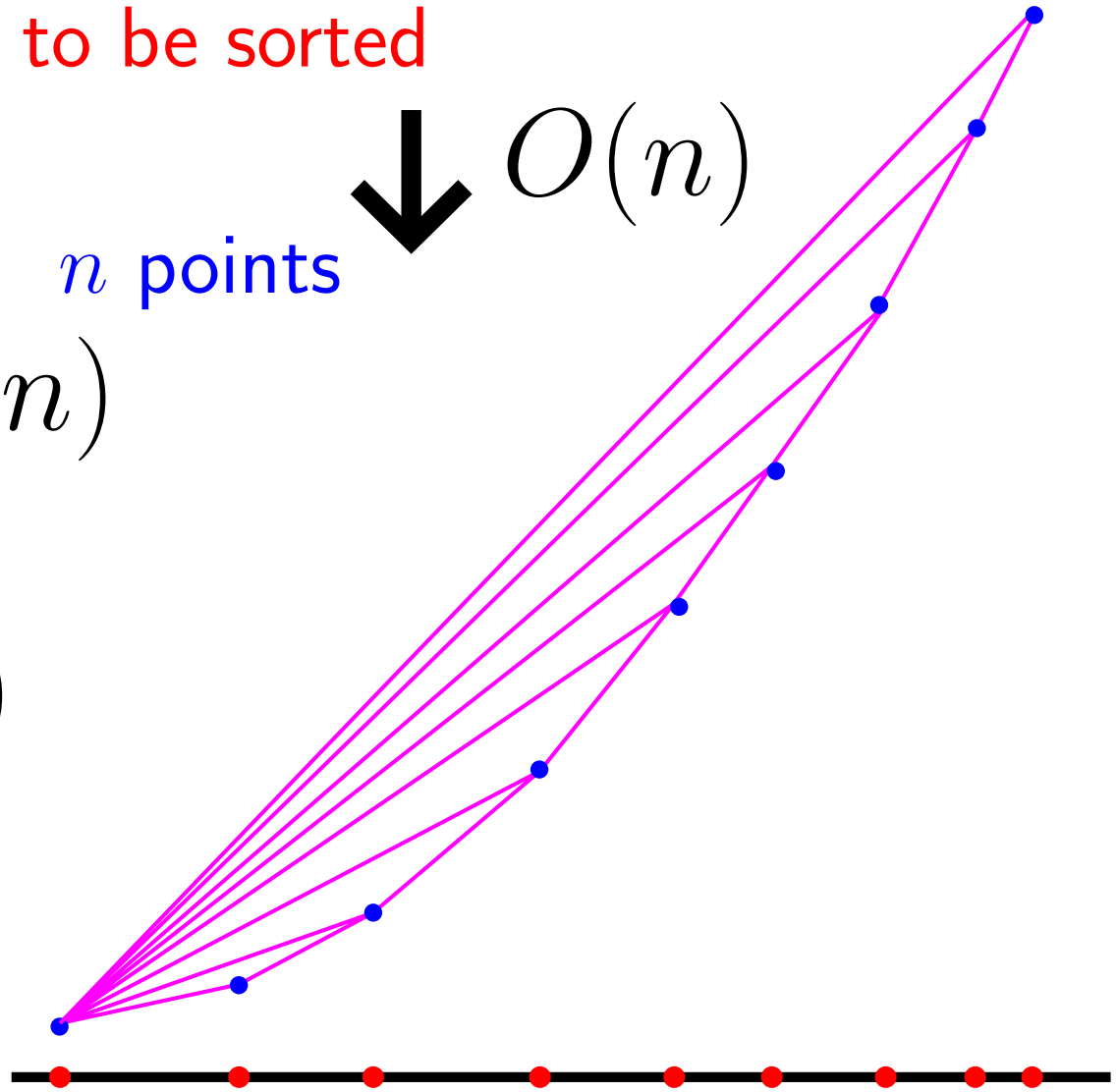
$(x_1, x_1^2), \ldots, (x_n, x_n^2)$ n points

$\downarrow f(n)$

Delaunay

$\downarrow O(n)$

$\rightarrow$ order in x



$$O(n) + f(n) \in \Omega(n \log n)$$