

1.

(i) number of comparison:

first pass would make $n-1$ comparisons

Second: $n-2$

third: $n-3$

⋮

last: 1

Gauss's formula

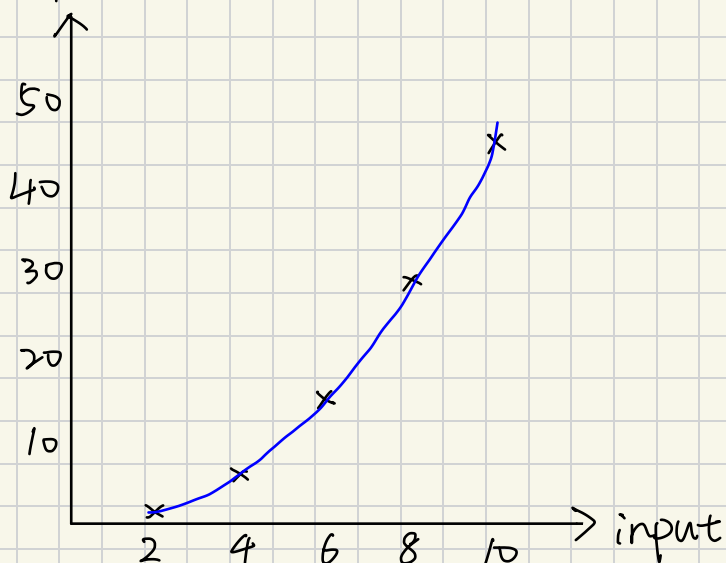
$$(n-1) + (n-2) + \dots + 2 + 1 = \frac{[(n-1) + 1](n-1)}{2} = \frac{n(n-1)}{2}$$

(ii) average number of swaps

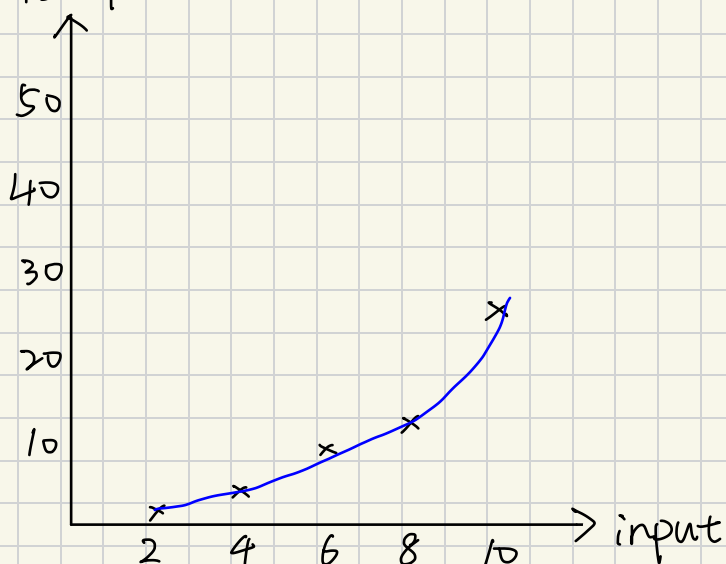
$$= \frac{\text{best} + \text{worst}}{2} = \frac{0 + \frac{n(n-1)}{2}}{2} = \frac{n(n-1)}{4}$$

4.

comparisons



Swaps



They do match the shape of the curve for n^2 .

Which is the average complexity $O(n^2)$