ENSF338 Exercise 3

Question 1: Derive the formulas for (i) number of comparisons, and (ii) average-case number of swaps for bubble sort

(i) number of comparisons

$$\frac{n(n-1)}{2} = \frac{n^2-n}{2} = n^2 = O(n^2)$$

(ii) average-case number of swaps for bubble sort

$$\frac{n(n-1)}{4} = \frac{n^2-n}{4} = n^2 = O(n^2)$$

Question 4:

The Graphs shows a quadratic function (n^2), which matches the time complexity of O (n^2). The number of comparisons is roughly double the number of swaps