Homework 4

Question 1

The best-case for insertion sort would be 1, 2, 3, 4, 5, where 0 is the number being inserted.
The worst-case for insertion sort would the same but in reverse: 5, 4, 3, 2, 1.

Question 2

The worst case order of complexity for insertion sort is $\mathcal{O}(n^2)$.
Insertion sort takes the newest element and tries to place it into the first correct index of the sorted set. The worst case from Question 1 would require x to be compared 5 times, so the formula for comparing and sorting n elements becomes $\frac{n(n+1)}{2} - 1$.

Question 3

The overall complexity for the sort procedure is $\mathcal{O}(n^2)$.