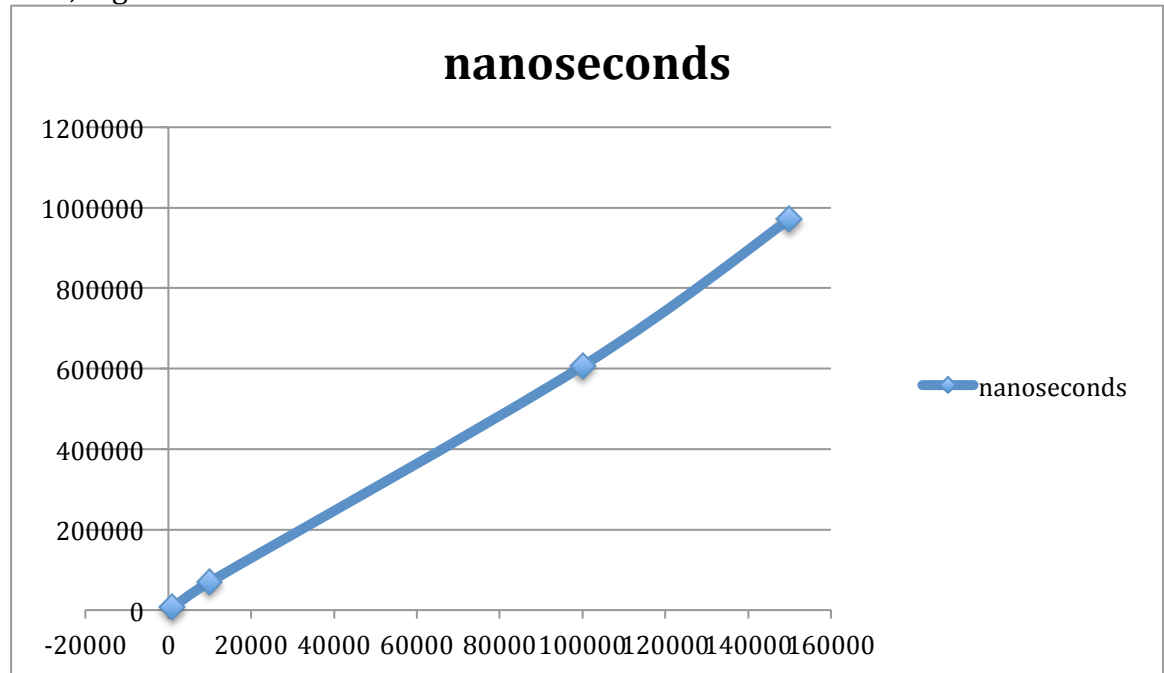Assignment 3 Analysis
Christina Foreman

1. My programming partner is Safia Hassan. I, Christina Foreman, submitted the source code for our program.
2. My partner and I switched roles regularly, usually after one or two methods were written. I would not prefer to switch more or less often because I feel like we switched the right amount.
3. I do plan on working with Safia again, as she contributes equally to the assignment. When we ran into problems that we needed to think about more, we both came back to our meetings prepared with possible solutions to our problems that we discussed before implementing.
4. If the sorted set had been backed with a List, most of the implementation of the methods would remain the same, but .get(index) and .set(index, object) would be used instead of using [index]. Also, a List would not have to be doubled once capacity was reached since the resizing of a List is built in and the capacity doesn't have to be determined at creation. The efficiency of programming time would be about the same since MySortedSet<E> implements SortedSet<E> and all of the methods would still need to be overridden, and the running time would be the same.
5. The contains method will have a Big-O of N. The set is passed through only once to look for a match.
6. The behavior in the timing test grows linearly, as shown in the graph below, and matches what was expected. Big-O is linear, N.
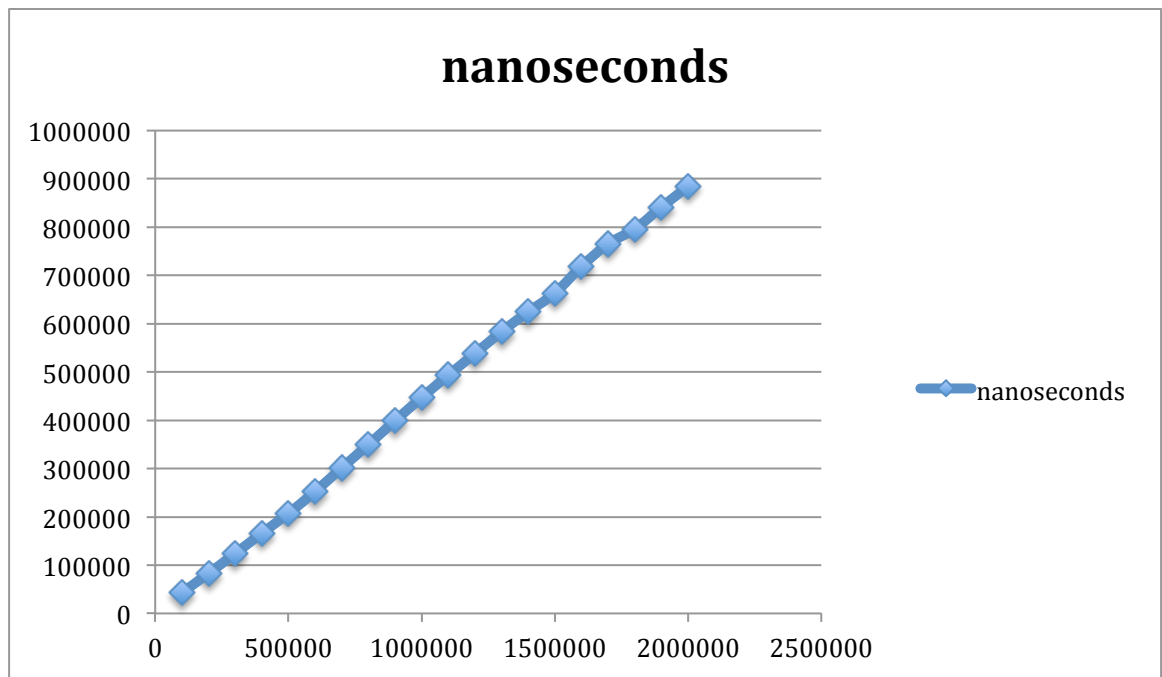
7. The behavior of the add method is exponential, n^2, as shown in the graph below. I tested sets of size 1000, 10000, 100000 and 150000. In the worst case, Big-O is N^2.

nanoseconds

8. My partner and I spent about 11.5 hours together on this assignment. I spent about 3 hours on my own experimenting and researching information for the assignment, and I spent about 2 hours on the timing experiments for the analysis (a lot of that time was spent just waiting for the timing tests to finish).