

Name: Jingyi Ouyang
PID: A53108909

Method1 is $\text{big-}\theta(n^2)$. This is a nested loop. The outer loop runs n times. Each time it runs, the inner loop runs. The total time is $n+1+n+n-1+\dots+1 = (1+n+1)*(n+1)/2 = \text{big-}\theta(n^2)$. The plot shows that the operating time increases while the input increases. If the amounts of input is big enough, it will show more accurate n^2 plot.

Method2 is $\text{big-}\theta(1)$. Because i and j are constant. This nested loop runs constant time. The plot shows a parallel which means the time does not change by input.

Method3 is $\text{big-}\theta(n)$. There are three for loop. For each loop the running time is $\text{big-}\theta(n)$. Because they are not nested. The total time is $\text{big-}\theta(n)$. From the plot, we can see that all the points are located near a straight line, which confirms the complexity of $\text{big-}\theta(n)$.