

1) Big $O(1)$, $O(n)$, $O(n^2)$, $O(n^3)$

- a) $O(n^3)$ because $n*n*n = n^3$ and the loop goes through $n*n*n$ cycles.
- b) $O(n)$ because the loop goes through n cycles
- c) $O(1)$ because this code will only loop once no matter what n is. However, it also won't compile because the curly bracket is facing the wrong way.
- d) $O(n^2)$ because it will go through n loops and then as the first video states it will go through $n(n+1)/2$ loops which comes out to n^2 so $O(n^2)$
- e) $O(n)$ Y is hard coded to 10 so it will loop 10 times no matter what $c = 10$ so this is $O(n)$
- f) $O(n)$ This code goes through 2 different loops that are n times large so this $2n$ or in other words $O(n)$

2) Recursion

- a) if the next node in the linked list is null then we are at the tail of the linked list
- b) The total sum is changed as well as the current node