1) (10 pts) ANL (Algorithm Analysis)

Write down the <u>worst case run-times</u> for each of the requested operations. <u>You may assume that each operation is done with an efficient algorithm.</u> Please leave your answer in <u>simplified Big-Oh</u> form, in terms of the variables given in the problem. Thus, please do NOT include any leading constants or unnecessary terms. Answers such as $O(2n^2)$ or $O(n^2 + \lg n)$ <u>will receive no credit</u>, even if they are technically correct. Each part is worth 1 point.

a)	Inserting k items, each into the front of a linked list which starts with n items.	
b)	Running a floodfill on a grid with r rows and c columns.	
c)	Sorting n elements via the Quick Sort algorithm.	
d)	Efficiently forming a heap out of n unsorted items.	
e)	Removing all of n items, one by one, from a Priority Queue that originally has n items.	
f)	Inserting n items, one by one, into a Binary Search Tree.	
g)	Inserting n items, one by one, into a AVL Tree.	
h)	Printing out the set of moves to solve the Towers of Hanoi with a tower of n disks.	
i)	Merging two sorted lists , one with r elements, the other with s elements, into a single sorted list.	
i)	Writing out the first 10 Fibonacci numbers	