Seminar 8: Complexity

1. Using the Master theorem write the time complexity of T(n). [2]

a=9, b=3, d=2

log 9 base 3 =2 which is equal to d.

So T(n)=O (

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a=1, b=4/3, d=1

log 1 =0 which is < d.

So T(n)=O(

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a=5, b=5, d=0

log 5 base 5 =1 which is > d.

So T(n)=O ()

1. Write the asymptotic complexity of the following functions then show witnesses for each.[6]
   * =O(nlogn)

Log n> 1, if n>2, so 5n<5nlogn, if n>2

5n+3nlogn< 5nlogn+3nlogn= 8nlogn

C=8, k=2

* + = O(n)

Log n < n, if n>2, and 5<5n, if n>2

Log n + 10n+ 5< n+10n+5n=16n

C=16, k=2

Log n< n, if n>2, , if n>2

11 n log n< 11 <11

11n logn +7< 11=18

C=18, k=2