Name:	Harshit Jain
Access ID:	hmj5262
Recitation:	8

Problem 0

Points:

Acknowledgements

(a) I did not work in a group.

(b) I did not consult without anyone my group members.

(c) I did not consult any non-class materials.

Problem 1

Points:

Compare Growth Rates

(a) $n^{1.5} = \Omega(n^{1.3})$ $\because n^{1.3} < n^{1.5}$

(b) $2^{n-1} = \Theta(2^n)$ $\because 2^{n-1} = \frac{2^n}{2}$ and constants (in this case, $\frac{1}{2}$) does not matter

(c) $n^{1.3logn} = \Omega(n^{1.5})$ $\because$ asymptotically $n^{1.3logn} > n^{1.5}$

(d) $3^n = \Omega(n \cdot 2^n)$ $\because$ asymptotically $3^n > n \cdot 2^n$

(e) $(logn)^{100} = O(n^{0.1})$ $\because$ power of $logn$ will only weaken the infinity of $logn$ and $n^{0.1} > (logn)^{100}$

(f) $n = \Omega((logn)^{log(logn)})$ $\because$ infinity of $(logn)^{log(logn)} >$ infinity of n

(g) $2^n = \Omega(n!)$ $\because$ infinity of exponential function is greater than the infinity of factorial function

(h) $log(e^n) = O(n \cdot logn)$ $\because log(e^n) = n$ and we know that $n < nlogn$

(i) $n + logn = \Theta(n + (logn)^2)$ $\because$ dominating term is n and powers of $logn$ will not affect infinities

(j) $5n + \sqrt{n} = \Omega(logn + n)$ $\because$ comparable functions are $\sqrt{n}$ and $logn$; $\sqrt{n} > logn$

Problem 2

Points:

Problem 3

Points:

Your solution starts here ...