

CMSC 441

Homework 1

Reading Assignment:

- Listen to Beethoven's 5-th symphony
- Read Chapters 1 through 3 of text and Chapters 0 to 2 Of Algorithms by DPV

Homework:

In each of the following situations, indicate whether $f = O(g)$, or $f = \Omega(g)$, or both (in which case $f = \Theta(g)$).

	$f(n)$	$g(n)$
1)	$n - 100$	$n - 200$
2)	$n^{1/2}$	$n^{3/2}$
3)	$100n + \log n$	$n + (\log n)^2$
4)	$n \log n$	$10n \log(10n)$
5)	$\log(2n)$	$\log(3n)$
6)	$10 \log n$	$\log(n^2)$
7)	$n^{1.01}$	$n \log^2 n$
8)	$n^2 / \log n$	$n(\log n)^2$
9)	$n^{.01}$	$(\log n)^{10}$
10)	$(\log n)^{\log n}$	$n / \log n$
11)	\sqrt{n}	$(\log n)^3$
12)	$n^{1/2}$	$5^{\log_2 n}$
13)	$n2^n$	3^n
14)	2^n	2^{n+1}
15)	$n!$	2^n
16)	$(\log n)^{\log n}$	$2^{((\log n)^2)}$
17)	$\sum_{i=1}^n i^k$	n^{k+1}