

MATH 302 Discrete Mathematics
Assignment 8. Due on Wednesday, November 11, 2009

Read: Sections 7.3, 4.3, 4.4.

Problems to be graded: [8 points]

§7.1/ 16, 28.

§7.2/ 24, 25. (These two problems are on first order recurrences.)

§7.3/ 12, 13, 21, 22,

Please also do these. (2 points)

Use the Master Theorem to give an asymptotic bound for the sequence $f(n)$ where $f(n)$ satisfies the following recurrences:

1. $f(n) = 4f(n/2) + n$
2. $f(n) = 4f(n/2) + n^2$.
3. $f(n) = f(9n/10) + n$
4. $f(n) = 7f(n/3) + n^2 \log n$.

Other problems:

§7.1/ 11, 13, 14, 19, 23, 44

§7.2/ 2(abce), 23, 28, 29.

§4.3/ 1, 2, 3, 4, 6, 8.

[Challenging Practice Problem]

The running time of an algorithm A is described by the recurrence relation $f(n) = 7f(n/2) + n^2$. A competing algorithm B has a running time of $g(n) = ag(n/4) + n^2$. What is the largest integer value for a such that B is asymptotically faster than A?