University of Washington   October 27, 2015
Department of Computer Science and Engineering
CSE 421, Autumn 2015

<u>Homework 5, Due Wednesday November 4, 2015</u>

Problem 1 (10 points):

Solve the following recurrences:

  a) $T(n) = 2T(n/2) + n^3$ for $n \geq 2$; $T(1) = 1$;

  b) $T(n) = T(7n/11) + n$ for $n \geq 2$; $T(1) = 1$;

In this and the following problems, you can ignore rounding issues (just round down to the nearest integer). A big-Oh answer is sufficient.

Problem 2 (10 points):

Solve the following recurrences:

  a) $T(n) = 9T(n/3) + n^2$ for $n \geq 2$; $T(1) = 1$;

  b) $T(n) = 7T(n/4) + n^2$ for $n \geq 2$; $T(1) = 1$;

Problem 3 (10 points):

Solve the following recurrences (if you are stuck on these, ask for help from the instructor, TA, or someone else. Don't spend too much time on them):

  a) $T(n) = T(\lfloor \sqrt{n} \rfloor) + 1$ for $n \geq 2$; $T(1) = 1$;

  b) $T(n) = 4T(\lfloor \sqrt{n} \rfloor) + 1$ for $n \geq 2$; $T(1) = 1$;

Extra Credit 4 (10 points):

Page 246, Exercise 1.