University of Washington
Department of Computer Science and Engineering
CSE 421, Autumn 2016

October 25, 2016

Homework 5, Due Wednesday November 2, 2016

Problem 1 (10 points):

Solve the following recurrences:

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

b) $T(n) = T(4n/5) + n$ 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) $T(n) = 16T(n/4) + n^2$ for $n \geq 2$; $T(1) = 1$;

b) $T(n) = 7T(n/3) + n^2$ 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) $T(n) = 2T(\lfloor \sqrt{n} \rfloor) + 1$ for $n \geq 2$; $T(1) = 1$;