

Homework 5, Due Wednesday, February 20, 1:29 pm, 2019

Turnin instructions: Electronics submission on canvas using the CSE 421 canvas site. Each numbered problem is to be turned in as a separate PDF.

In the problems on this assignment, you can ignore rounding issues (just round down to the nearest integer). A big-Oh answer is sufficient. You should solve these problems by unrolling the recurrence. Do not rely on the *master theorem*.

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 $n \geq 2$; $T(1) = 1$;

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 $n \geq 2$; $T(1) = 1$;