

CSci 3501 Assignment 3

Due Wednesday, Sept. 27 in class

Problem 1. (14 points) Exercises 4.3-1 p. 75, 4-1 a, b, c, e p. 85. Use the Master Theorem to solve these recurrences. Make sure to prove that **all** the conditions for the appropriate case of the Master Theorem are satisfied.

Problem 2. (8 points) Exercise 4-4 f, h p. 86. Explain why you cannot use the Master Theorem for these recurrences. Draw recurrence trees for each of the two cases, use the trees to estimate the answer. If a tree doesn't seem to give you a good approximation, try other ways of guessing, such as compare the recurrences to a close one for which you know a solution; explain your reasoning.

For both cases **prove your guess using induction**. Even though you can only prove the O -approximation of the result, try to make your guess a Θ -approximation.

Problem 3. (4 points) Exercises 6.1-5, 6.1-6 p. 130.

Problem 4. (4 points) Exercise 6.2-2 p. 132.

Problem 5. (8 points) Exercises 6.4-1, 6.4-3 p. 136.