CSci 3501 Assignment 3
Due Friday, September 19 in class

Problem 1 (12 points). Exercise 2-2 p. 38. As a hint for question **a**, take a look at the loop invariant for the insertion sort. For part **d** prove the worst-case efficiency similarly to the proof for the insertion sort (see pp. 24-25).

Problem 2 (12 points). Write a recursive version of bubblesort in pseudocode. Write and solve the recurrence relation for it (in the worst case). How does it compare to the worst-case of the bubblesort in problem 1?

New problem 3 (4 points). Use the substitution method to prove that the recurrence $T(n) = 2T(\frac{n}{2}) + n^2$ for $n > 1$ (with the condition $T(n) = \Theta(1)$ for $n = 1$) has the solution $T(n) = \Theta(n^2)$. Show all your work.

Old (canceled) problem 3 (4 points). Exercise 4.1-6 p. 67. Use the substitution method, show all your work. **If you already did this one, it's OK to submit it. You don't need to do the new one.**