MATH 302 Discrete Mathematics
Assignment 1. Due on Wednesday, February 3, 2016

Read: Sections 3.1-3.2.
Definition: Write down the definitions for the following terms. (5 points)
algorithm,
greedy algorithm,
f(x) is $O(g(x))$,
f(x) is $\Omega(g(x))$,
f(x) is big-Theta of $g(x)$

Problems to be graded: (10 points)
§3.1: 8, 9,
§3.2: 6, 7, 16, 18, 26, 36, 44.
In addition, do

1. Given a list of integers $a_1, a_2, \ldots, a_n$, ($n \geq 100$), which may not be sorted, describe an algorithm that finds the second largest integer from the list.

   (You can either write in pseudocode, or use plain English. Please do not use any specific language, as the grader may not be familiar with that language.

   Please self-test your algorithm on the list 1, 1, 2, 2, 3, 3, \ldots n, n. Your algorithm should return the number $n$, but not $n-1$. You don’t need to write down the testing in submitted homework. )

Suggested Practice Problems:
§3.2: 1, 2, 3, 4, 8, 9, 20, 21, 22, 25, 30, 37, 45, 46, 47, 61, 74.