# MATH 302 Discrete Mathematics

## Assignment 1. Due on Wednesday, January 25, 2012

## 7th edition of the textbook

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**Read**: Sections 3.1-3.2 of the 7th edition.

**Definition**: Write down the definitions for the following terms.

**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**:

§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 test your algorithm on the list $1, 1, 2, 2, 3, 3, \ldots n, n$. Your algorithm should return the number $n$. )

**Suggested Practice Problems**:

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