Mathematic 407, Fall 2017: Assignment #4

Due: **Thursday, October 5th**

Instructions: Please ensure that your answers are legible. Also make sure that sufficient steps are shown. Page numbers refer to the course text.

Problem #1. Show that if f is an entire function (i.e. holomorphic on all of $\mathbb{C}$) and satisfies $|f(z)| \leq C(1 + |z|^n)$ for some $C > 0$ and $n \geq 0$, then f is a polynomial of degree at most n. Hint: What do the Cauchy inequalities tell you about $f^(n + 1)(z)$?

Problem #2. Chapter 2: Exercise 11.

Problem #3. Chapter 2: Exercise 12.

Problem #4. Chapter 2: Exercise 15.

Problem #5. Chapter 2: Problem 1 a). (Note: Problems are listed after Exercises in the textbook).