

**MAT137Y - SUMMER 2009**  
**WEEK 10: JULY 14<sup>th</sup> - JULY 20<sup>th</sup>**

**0.1. Suggested Problems.**

**§8.4:** #5, 7, 13, 15, 19, 27, 29, 33, 44, 47, 54 & 55

**§8.5:** #3, 5, 11, 13, 19, 23, 31, 35, 37, 45, 49 & 50

**§8.6:** #1, 3, 13, 21, 27, 29, 31, 37, 40 & 44

**§11.2:** #3, 5, 9, 11, 19, 21, 29, 31, 33, 43, 47, 51, 60 & 62

**§11.3:** #5, 7, 11, 13, 15, 19, 23, 25, 29, 31, 39, 45, 52, 54, 55, 58 & 59.

**0.2. Assigned Problems.** Due **July 21<sup>st</sup>**, in lecture.

- (1) Evaluate

$$\int \frac{e^t}{e^{2t} + 5e^t + 6} dt.$$

(*This is 8.5.36*)

- (2) (a) Prove that if  $0 < a < 2$ , then  $a < \sqrt{2a} < 2$ .  
(b) Prove that the sequence

$$\sqrt{2}, \sqrt{2\sqrt{2}}, \sqrt{2\sqrt{2\sqrt{2}}}$$

converges.

- (c) Find the limit of this sequence.
- (3) (a) Suppose that  $\{a_n\}$  is a convergent sequence of points all in  $[0, 1]$  (ie.  $a_n \in [0, 1]$  for all  $n$ ). Prove that  $\lim_{n \rightarrow \infty} a_n$  is also in  $[0, 1]$ .  
(b) Find a convergent sequence  $\{a_n\}$  of points all in  $(0, 1)$  such that  $\lim_{n \rightarrow \infty} a_n$  is not in  $(0, 1)$ .