# 21-132 Assignment 6: due Tuesday March 17

**6.1-3.** From Apostol page 382, do problems 30, 34, 35b

**6.4-6.** From Apostol page 391, do problems 3, 4, 17 (6, 16 are recommended)

**6.7.** Define a sequence $\{a_n\}$ recursively via $a_1 = 1$, $a_n = e^{-a_{n-1}}$ for $n > 1$.

(i) Show that $a_n \in [e^{-1}, 1]$ for all $n$.

(ii) Show there exists a unique $x \in [e^{-1}, 1]$ such that $x = e^{-x}$.

(iii) Prove (using the $\varepsilon$-$N$ definition of limit) that $\lim_{n\to\infty} a_n = x$.