Assignments 8
(Dec 8 November 6)

Reading: (from Reed) §4.6, 5.1

Problems: §3.3: #13, 15
§4.1: #2, 3, 5, 10, 12(c,d)
§4.2: #2, 4, 6, 7, 12

Additional Problem:

1. Examine the difference quotient used in the definition of the derivative of \( \cos x \) and write down, but do not evaluate, the limits you need to know in order to compute \( \cos' x \). In this context, what is wrong with your answer to # 4, §4.2?

2. Let \( f : \mathbb{R} \to \mathbb{R} \) be a function and let \( c \in \text{Dom} \ f \). Suppose that for every sequence \( \{a_n\} \subset \text{Dom} \ f \) which converges to \( c \), the sequence \( f(a_n) \) also converges. Prove that if \( \{a_n\} \to c \) and \( \{b_n\} \to c \), then

\[
\lim f(a_n) = \lim f(b_n)
\]

(Suggestion: Consider the sequence \( \{a_1, b_1, a_2, b_2, \ldots \} \).)