21-131 Assignment 8: due Tuesday October 21

8.1–2. From Apostol page 114, do problems 6, 15

8.3–4. From Apostol page 116, do problems 2, 7

8.5–6. From Apostol page 124, do problems 7, 13

8.7. Recall we say that a function f on $I \subseteq \mathbb{R}$ is L-continuous if and only if

$$|f(x) - f(y)| \leq L|x - y| \quad \forall x, y \in I.$$

(a) Suppose $a > 0$. Show $\sqrt{x}$ is L-continuous on $[a, \infty)$ with $L = \dfrac{1}{2\sqrt{a}}$.

(b) Show $\sqrt{x}$ is *not* L-continuous on $[0, \infty)$ for any $L > 0$.
(I.e., prove $\neg(\exists L$ $\sqrt{x}$ is L-continuous on $[0, \infty))$.)