Problem Set 4  
Due Friday, May 4.

Real Analysis  
Math 131A, Spring Quarter 2018

1. Do problems 9.1 (b), 9.4, 9.9, 9.10, 9.11, 9.15, 10.7, 10.10 in the textbook.

2. Suppose \((s_n), (t_n)\) are sequences of real numbers such that for each \(\varepsilon > 0\), there is \(n_0\) such that for all \(n \geq n_0\) we have \(|s_n - t_n| < \varepsilon\). Let \(s \in \mathbb{R}\) such that \(s_n \rightarrow s\). Prove that also \(t_n \rightarrow s\).

3. (Extra credit.) Consider the sequence \((e_n)\) given by \(e_n = \left(1 + \frac{1}{n}\right)^n\) for each \(n \geq 1\). Show that \(e_n \leq 3\) for each \(n \geq 1\).