

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  $n \geq 1$ .