

MAT 137Y: Calculus with proofs
Assignment 8 - Comments and common errors

Q1

- Notice that $x_{2n} = E_n$, not E_{2n} . There is a “shift” in the index between x and E . The same is true for O .

In particular, in the proof in the sample solutions, it would **NOT** work to take $n = \max\{n_1, n_2\}$. You need to “convert” from indices for E and O to indices for x , so to speak.

- As always, introduce and **fix** ε before you do algebra with it.

Q2

- To prove the sequence $\{E_n\}_{n=1}^{\infty}$ is bounded (or any other sequence), the bound **may not** depend on n .
- We asked you to begin the proof with a summary or outline of the proof. Why do some of you make an effort to write proofs that are hard to read?
- It is not enough to guess a pattern based on the first few terms. You need to prove it works for all terms.

Q3

- “ \ll ” is a new concept. It is not the same as “ $<$ ”. You may not assume that properties of “ $<$ ” are also properties of “ \ll ” without proof (some are, and some aren’t). Instead, use the definition of “ \ll ”.