

**Math 121 Topology**

Spring quarter 2007 (R.E.Greene)

Homework #3

Due : Friday April 27

From your text :

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*Also:*

Consider the functions  $f_n$  on  $[0,1]$ ,  $f_n(x)=\sin(\pi nx)$ . Find explicitly a subsequence which converges (pointwise) on the rational numbers in  $[0,1]$ , i.e.,  $\{f_{n_j}(x)\}$  is convergent for each  $x \in \mathbb{Q} \cap [0,1]$ . Discuss carefully why your subsequence does not converge uniformly (to anything).