For discussion Thursday, 13 January:

Please look over the material in section 11.1 of Bartle and Sherbert's book (our text: **BS** for short), and section 9 of Bartle's book (*Elements of Real Analysis*, **E** for short), most of which is familiar to you. Be prepared to ask any questions you might have on this material. In addition, please do the following problems; they will not be collected, but you may wish to ask questions about the ones you find difficult.

A. BS page 318: 2, 4, 5, 6, 7, 8, 10 where closed is defined as in class: complement of an open set

In addition, do the following problem:

B.   Let $S = \{(x, y) \in \mathbb{R}^2 : x \leq 0$ OR both $y > 0$ and $xy \geq 1\}$
    (a) Prove that S is a closed set in $\mathbb{R}^2$.
    (b) Show that S is not connected, that is, find open sets U and V in $\mathbb{R}^2$ so that $S \subset U \cup V$ and $U \cap V = \emptyset$.