

**Assignment 9**  
(Due March 20, 2008)

**Reading:** (*from Reed*) §4.6

**Problems:** §4.5: #6, 8 (You need 1. below for (a); for (b) use #6)

**Additional Problems:**

1. In #11(a), p. 141 you showed that  $\ln x \rightarrow \infty$  as  $x \rightarrow \infty$ . Use a similar argument to show that

$$\int_{\frac{1}{n}}^1 \frac{dt}{t} \rightarrow \infty$$

as  $n \rightarrow \infty$ . (Pick an appropriate partition  $P$  of  $[\frac{1}{n}, 1]$  and show that the corresponding lower sum tends to  $\infty$  as  $n \rightarrow \infty$ .) Conclude that  $\ln x \rightarrow -\infty$  as  $x \rightarrow 0$ .