Math 131 - Problem Set 5
Due Tuesday, Oct 9

From Munkres: 18.4, 26.4, 26.6, 26.7, 26.8, 27.2, 27.4

1. Let X be the union of $\mathbb{R}^n$ and one additional point, called ∞. Consider the topology $\mathcal{T}$ with basis given by open balls in $\mathbb{R}^n$, plus the sets

$$U_r = \{\infty\} \cup \{x \in \mathbb{R}^n \mid |x| > r\}.$$

   Show that X is a compact Hausdorff space.