- §26 #1, 5, 7, 8

There is the one non-book left over from last week. I've repeated it below. Come ask for hints if need be!

1.

a. Show that every connected manifold is path connected. *Hint:* Show it is locally path connected.

b. Show that if p, q are elements of the interior of the closed unit ball

$$\mathbb{B}^n = \{x \in \mathbb{R}^n : |x| \leq 1\},$$

then there is a homeomorphism $\phi : \mathbb{B}^n \to \mathbb{B}^n$ such that $\phi(p) = q$ and such that $\phi(x) = x$ for every x with $|x| = 1$.

c. Show that the homeomorphism group of a connected manifold acts transitively. In other words, show that if M is a connected manifold, then for any two points p and q in M there is a homeomorphism $\psi : M \to M$ such that $\psi(p) = q$.