- §22 #3
- §23 #7
- §25 #1, #2c, #9

The following problem will not be due this week, but will be part of next week's assignment. I'm leaving it here in case you want to think about it.

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 $\psi(p) = q$.