# PROBLEM SET #2

**1.** Show that if $S^m \hookrightarrow S^n \to S^l$ is a fibration, then $n = m + l$ and $l = m + 1$.

**2.** Compute the cohomology groups of $SO(4)$.

**3.** Compute the cohomology of the space of continuous maps $S^1 \to S^3$.

**4.** Find the ring structure on $H^*(\Omega S^n)$.

**5.** Find the ring structure on $H^*(\Omega \mathbb{CP}^n)$.

**6.** Find the ring structure on $H^*(K(\mathbb{Z}, n); \mathbb{Q})$.

**7.** Find the ring structure on $H^*(SU(n))$ and $H^*(U(n))$.