1. Suppose $X$ is a CW-complex whose top cells are in dimension $d$. Show that any map from $X$ to a connective cover $C_m X$ must be nullhomotopic if $m > d$.

2. Similarly, show that there cannot be any map $P_2 S^2 \to S^2$ from the Postnikov stage to $S^2$ that induces an isomorphism on $\pi_2$.

3. Show that $S^3 \times P_2 S^2$ has the same homotopy groups as $S^2$, but that the two cannot be homotopy equivalent.

4. Suppose $A \to X$ is a CW-inclusion such that $A$ is $n$-connected and the inclusion is $m$-connected. Find the strongest relationship that you can between $\pi_k(X/A)$ and $\pi_k(X, A)$ using the Blakers-Massey excision theorem,