Math 527 - Homotopy Theory
Spring 2013
Homework 7, Lecture 3/1

Problem 4. (Hatcher § 4.1 Exercise 16 and more)

a. Let (X, x_0) be a pointed space. Show that the summand inclusion $\iota\colon X \hookrightarrow X \vee S^n$ induces isomorphisms on homotopy groups π_i (based at any point) for all $i < n$.

b. Let X and Y be connected CW-complexes. Show that any map $f\colon X \to Y$ factors as a composite $X \xrightarrow{g} Z \xrightarrow{h} Y$ where $g\colon X \to Z$ induces isomorphisms on π_i for $i \leq n$ and $h\colon Z \to Y$ induces isomorphisms on π_i for $i \geq n+1$.