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Homotopy Theory

Summer 2015

Homework 7

Due: June 4, 2015

Problem 13

Let X be a finite connected CW complex and Y a space with the property that for all $i \leq \dim X$ the groups $\pi_i(Y)$ are finite. Show that the set of homotopy classes of maps

$$[X, Y]$$

is finite.

Problem 14

Let X and Y be CW complexes such that X is m -connected and Y is n -connected. Show that

- (i) the pair $(X \times Y, X \vee Y)$ is $(n + m + 1)$ -connected,
- (ii) the smash product $X \wedge Y$ is $(n + m + 1)$ -connected.