

Math 527 - Homotopy Theory
Spring 2013
Homework 2, Lecture 1/25

Problem 2. Show that a pointed homotopy between two pointed maps $X \rightarrow Y$ is the same as a pointed map

$$X \wedge (I_+) \rightarrow Y$$

where $(-)_+$ denotes the disjoint basepoint construction.

Problem 3. Let X be a pointed space.

a. Show that the functor $X \wedge -: \mathbf{Top}_* \rightarrow \mathbf{Top}_*$ sends pointed-homotopic maps to pointed-homotopic maps.

b. Show that the pointed map “inclusion at 0”

$$X \rightarrow X \wedge (I_+)$$

$$x \mapsto [x, 0]$$

is a pointed homotopy equivalence.