

Math 527 - Homotopy Theory  
Spring 2013  
Homework 2, Lecture 1/23

**Problem 1.** Show that the reduced suspension  $\Sigma X = X \wedge S^1$  of any pointed space  $X$  is a homotopy cogroup object in  $\mathbf{Top}_*$ , with structure maps coming from those of  $S^1$  (c.f. Homework 1 Problem 3).