Math 525, Spring 2018. Homework 6
Due: Thursday, March 8, 2018

(1) Hatcher §2.1 exercise 1

(2) Hatcher §2.1 exercise 4

(3) Hatcher §2.1 exercise 5

(4) Hatcher §2.1 exercise 8

(5) Find a Δ-complex structure for, and compute the associated homology groups of, the space X obtained from the annulus $A = \mathbb{S}^1 \times [0, 1]$ by gluing $\mathbb{S}^1 \times \{1\}$ to $\mathbb{S}^1 \times \{0\}$ by a map representing 2 times the generator of $\pi_1(\mathbb{S}^1)$.

(6) Consider a representation space (i.e., polygon with sides identified) for the orientable surface of genus 2, $\mathcal{M}_2$, (i.e., the two-holed torus) and use it to describe a Δ-complex structure on this space (e.g., by putting a vertex at the center and subdividing into triangles). Compute the homology of $\mathcal{M}_2$.