## HOMEWORK 3 – 2019

**Example 1.** Compute the simplicial homology groups of the Klein bottle. Use the folowing model of the Klein bottle as a $\Delta$-complex:

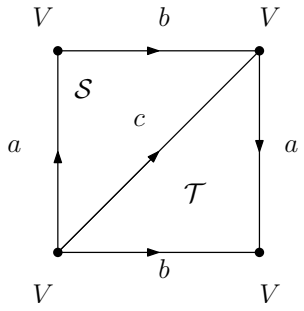


FIGURE 1. Model of the Klein bottle

**Example 2.** Compute the homology groups of the projective plane. Use the following model:

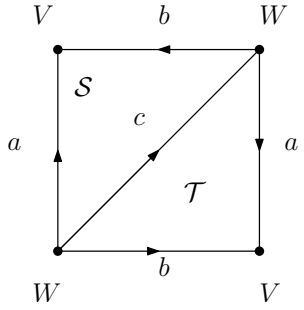


FIGURE 2. Model of the real projective plane

**Example 3.** We have defined the unreduced suspension of a space $X$ as

$$SX = X \times I/\sim,$$

where $(x_1, 0) \sim (x_2, 0)$, $(x_1, 1) \sim (x_2, 2)$, and the reduced suspension as

$$\Sigma X = SX/(\{x_0\} \times I).$$

Prove that $\Sigma X = (X, x_0) \wedge (S^1, s_0)$.