

HOMEWORK 3

Example 1. Prove

$$\delta \circ \delta = 0$$

for the boundary operator

$$\delta(\sigma) = \sum_{i=0}^n (-1)^i \sigma \circ \varepsilon_n^i$$

in a singular chain complex $C_*(X)$.

Example 2. Compute the homology groups of the torus. Use the model of the torus as a Δ -complex from Hatcher, page 102.

Example 3. Compute the homology groups of the projective plane. Use the following model:

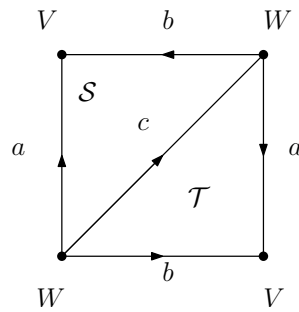


FIGURE 1. Model of Real projective plane