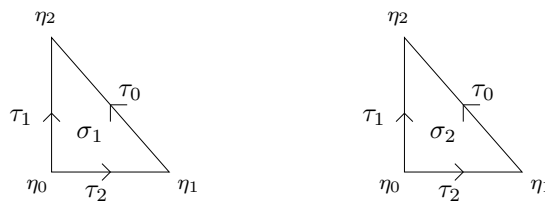


Homework 8

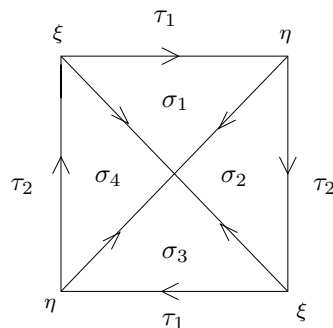
Due Friday, March 18, 2011

- Let S be the Δ -complex below, where the two edges labelled τ_i are glued together for $i = 1, 2, 3$, and similarly for the vertices η_i .



What is the topological space underlying S ? Compute its simplicial chain complex and homology groups.

- What is the following Δ -complex?



Write down its simplicial chain complex, and so compute its *rational* homology.

Show that $\tau_1 + \tau_2$ is a 1-cycle, and that $2(\tau_1 + \tau_2)$ is a boundary. Using this show that its *integral* homology groups are $H_0 = \mathbb{Z}$, $H_1 = \mathbb{Z}/2\mathbb{Z}$, $H_2 = 0$.

Compare with the appropriate calculation in lectures.