

**Math 722: Algebraic Topology**  
**Problem Set #6**  
**Due Wednesday, April 11**

1. Verify that the dunce cap (defined on p. 104) has a  $\Delta$ -complex structure, but that if you give a 2-simplex's boundary the cyclic orientation and identify its edges, then it is not a  $\Delta$ -complex.
2. Verify that you can give the figure on the bottom of p. 100 a  $\Delta$ -complex structure.
3. p. 131, #2
4. Show that a continuous map  $f : X \rightarrow Y$  induces a map on simplicial homology,
$$f_* : H_n^\Delta(X) \longrightarrow H_n^\Delta(Y),$$
for each  $n$ . Be sure to check your map is well-defined.
5. p. 131, #4.