DYNAMICAL SYSTEMS

HOMEWORK #6

HTTP://WWW.ITS.CALTECH.EDU/∼ASGOR/DYNSYS/

1. Construct an example of a homeomorphism of a compact metric space with infinite topological entropy.

2. Calculate the metric entropy of the tent map (with respect to the Lebesgue measure).

3. Calculate the metric entropy of baker's transformation (with respect to the Lebesgue measure).

4. Suppose a measure-preserving transformation $f : (M, \mu) \to (M, \mu)$ has a generator with k elements. Prove that $h_\mu(f) \leq \log k$.

5. Construct an example of a homeomorphism f of a compact metric space with finite topological entropy that does not have a measure of maximal entropy (an invariant measure μ is called "a measure of maximal entropy" if $h_\mu(f) = h_{top}(f)$).