DYNAMICAL SYSTEMS

Homework #4

Problem 1.

Denote by $F(S^1)$ the set of all C^1-diffeomorphisms of S^1 that preserve orientation and have at least one fixed point. Describe all diffeomorphisms from $F(S^1)$ that satisfy Axiom A, and show that all of them are structurally stable.

Problem 2.

Give an example of a diffeomorphism $f : M \to M$ of a smooth manifold such that

$$\Omega(f) \neq \Omega(f|_{\Omega(f)})$$

Problem 3.

Construct an example of a locally maximal hyperbolic set Λ such that periodic points are not dense in Λ.

Problem 4.

This problem will not be graded. Suggest (as many as you can, better at least three) problems on the topics covered (expanding maps of a circle, topological Markov chains, hyperbolic automorphism of a torus) that you would suggest for this homework. You do not need to provide solutions.