

1. Let $M = (M, \omega)$ be a closed symplectic manifold. If $H : S^1 \times M \rightarrow \mathbb{R}$ is a non-degenerate Hamiltonian, then $\#\{x \in M \mid x = \phi_1^H(x)\}$ is finite.
2. Suppose that you have a friend who vaguely knows about Morse theory but has never heard about Floer theory. Write a one page letter to your friend explaining Hamiltonian Floer cohomology.
3. Prove the following general symplectic neighborhood theorem. (Hint: Moser)

Theorem. *Let M be a manifold and let $K \subset M$ be a closed submanifold. Suppose that ω_0, ω_1 are symplectic forms on M whose restrictions to the bundle $TM|_K$ agree. Then there exists a neighborhood $K \subset \mathcal{U} \subset M$ and an isotopy $\phi_{(-)}(-) : [0, 1] \times \mathcal{U} \rightarrow M$ such that*

- $\phi_0 = id$
- ϕ_t is the identity on K
- $\phi_1^* \omega_1 = \omega_0$