(1) Recall the Hermitian orbit $F^\Delta$ defined in class. When $\lambda = (\lambda_1, \ldots, \lambda_n)$ and the $\lambda_i$ are distinct, we showed that $F^\Delta$ is diffeomorphic to the flag manifold.

Give a flag-like description of $F^\Delta$ when the points are not necessarily distinct.

What is the dimension of $F^\Delta$?

(2) Prove the original Moser’s theorem:

If $M$ is compact oriented manifold and $\eta_0, \eta_1$ are two volume forms with the same volume, then there exists a diffeomorphism $\phi : M \to M$ such that $\phi^* \eta_1 = \eta_0$.

Use this result to classify symplectic forms on compact 2-manifolds.

(3) Do Homework 8, question 2 in da Silva.