

**MAT 401 HOMEWORK-1 DUE AT THE BEGINNING OF CLASS ON THURSDAY,
SEPTEMBER 5**

- (1) **Please read the your assigned section for the first presentation** before class on Tuesday, September 3.
- (2) Determine the subsets of \mathbb{C} on which the functions $\frac{1}{z}$ and $|z|^2$ are holomorphic.
- (3) In class we gave two coordinate charts that together cover the sphere S^2 .
 - (a) Show how to use stereographic projection to determine the coordinate functions.
 - (b) Determine an expression for the transition function, and find the domain on which it defines a holomorphic map.
- (4) Work out the details to show that the morphism in example 1.33 on page 19 is unramified.