MATH 351: RIEMANN SURFACES AND DESSINS D'ENFANTS
HOMEWORK #3

Problem 3.1. Let X be a topological surface. Let $\phi_1 : U_1 \to V_1 \subseteq \mathbb{C}$ and $\phi_2 : U_2 \to V_2 \subset \mathbb{C}$ be local coordinates on X. We say that ϕ_1, ϕ_2 are *holomorphically compatible* if either $U_1 \cap U_2 \neq \emptyset$ or the *transition function* $t_{12} = \phi_2 \circ \phi_1^{-1} : V_1 \to V_2$ is holomorphic.

Suppose that ϕ_1, ϕ_2 are holomorphically compatible. Show that the associated transition function t_{12} has nonvanishing derivative t'_{12} on its domain. Conclude that ϕ_2, ϕ_1 are holomorphically compatible.

Date: Wednesday, 16 January 2013.