Homework 11

1. Prove that the function $f(z) = (1 - iz)^2$ is univalent in the upper half-pane but not in the whole complex plane.

2. Show that the converse of Lemma 12.25 of Silverman book is false, i.e. find a counterexamle such that even if $f(z)$ is conformal at each point of the domain D, it is not a univalent in that domain.