**MATH 508 Challenge problem #7**
Turn in no later than Apr. 12 for credit

First, prove that if $\Gamma$ is a simple closed curve enclosing domain $D$, then

$$\int_\Gamma \bar{z}\,dz = 2i(\text{area of } D).$$

Then find a way to generalize this result to the case when $\Gamma$ is not closed; i.e. it runs from $z_a$ to $z_b$.