Due Date: June 27, 2011 Monday   NAME:...

Ali Sinan Sertöz   STUDENT NO:..

Math 302 Complex Analysis II – Homework 4

1	2	TOTAL
10	10	20

Please do not write anything inside the above boxes!

Check that there are 2 questions on your booklet. Write your name on top of every page. Show your work in reasonable detail. A correct answer without proper or too much reasoning may not get any credit.

Q-1) Let R be the complex plane with the non-positive real axis taken out. Find explicitly a conformal mapping f of R onto the unit disc U such that $f(1) = 0$ and $f'(1) > 0$.

Solution:

Q-2) Let S be the Archimedean spiral given parametrically as

$$x(t) = t\cos t, \ y(t) = t\sin t, \ t \in [0, \infty).$$

Let R be the complement of S in $\mathbb{C}$.

Can you define a branch of log function on R? If *yes*, construct this branch. If *no*, explain why.

Is R still uniformly conformal to the open unit disc?

Solution: