Due Date: 1 December 2014, Monday – Class time NAME:.....

Ali Sinan Sertöz STUDENT NO:.....

Math 503 Complex Analysis – Homework 4

1	2	3	4	5	TOTAL
100	0	0	0	0	100

Please do not write anything inside the above boxes!

Check that there is **1** question on your exam 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.

NAME: STUDENT NO:

Q-1) [Conway, page 133, Exercise 5] Let f be analytic in $D = \{z \mid |z| < 1\}$ and suppose that $|f(z)| \leq M$ for all z in D.

(a) If $f(z_k) = 0$ for $1 \leq k \leq n$ show that

$$|f(z)| \leq M \prod_{k=1}^{n} \frac{|z - z_k|}{|1 - \bar{z}_k z|}$$

for $|z| < 1$.

(b) If $f(z_k) = 0$ for $1 \leq k \leq n$, each $z_k \neq 0$, and $f(0) = M(z_1 z_2 \cdots z_n)$, find a formula for f.

Solution: