

Due Date: December 27, 2013 Friday

NAME:.....

Ali Sinan Sertöz

STUDENT NO:.....

Math 302 Complex Analysis II – Homework 4

1	2	3	4	TOTAL
10	10	10	10	40

Please do not write anything inside the above boxes!

Check that there are 4 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.

NAME:

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Q-1) Let f be an entire function of finite order with finitely many zeros. Show that either $f(z)$ is a polynomial or $f(z) + z$ has infinitely many zeros.

Solution:

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Q-2) Show that $\Gamma(z) = \lim_{n \rightarrow \infty} \int_0^n t^{z-1} \left(1 - \frac{t}{n}\right)^n dt$.

Solution:

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Q-3) Assume that $\sum_{k=1}^{\infty} z_k$ and $\sum_{k=1}^{\infty} |z_k|^2$ converge. Show that $\prod_{k=1}^{\infty} (1 + z_k)$ converges.

Solution:

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Q-4) Show that $\sum_{p \text{ prime}} \frac{1}{p}$ diverges.

Solution: