Due Date: 16 April 2015, Thursday
Time: Class time
Instructor: Ali Sinan Sertöz

NAME:..

STUDENT NO:.......................................

Math 430 / Math 505 Introduction to Complex Geometry – Midterm Exam I

1	2	3	4	5	TOTAL
40	30	30	0	0	100

Please do not write anything inside the above boxes!

Check that there are **3** questions 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. **Submit your solutions on this booklet only. Use extra pages if necessary.**

Rules for Homework and Take-Home Exams

(1) You may discuss the problems with your classmates or with me but it is absolutely mandatory that you write your answers alone. Any similarity with your written words with any other solution or any other source that I happen to know is a direct violation of honesty.

(2) In particular do not lend your written solutions to your friends, nor borrow your friends's written solutions. Oral exchange of ideas is acceptable and is in fact encouraged.

(3) You must obey the usual rules of attribution: all sources you use must be explicitly cited in such a manner that the source can be easily retrieved by the reader. This includes any ideas you borrowed from your friends.

(4) Finally, in your written solution make sure that you exhibit your total understanding of the ideas involved, even mentioning where you quote a result but don't really follow the reasoning. This is an essential ingredient of learning.

Affidavit of compliance with the above rules: *I affirm that I have complied with the above rules in preparing this submitted work. Every solution I wrote reflects my true understanding of the problem. Any sources used, ideas from friends or others are explicitly cited without exception.*

Please sign here:

NAME: STUDENT NO:

Q-1) Let $M \subset \mathbb{C}^n$ be a complex manifold of dimension $n-1$. Prove or disprove that for any point $p \in M$, there exists an open neighborhood $U \subset \mathbb{C}^n$ of p, and a holomorphic function f on U such that the zero set of f is precisely $U \cap M$.

Solution:

NAME: STUDENT NO:

Q-2) Let T be an elliptic curve. Show that any holomorphic map $f_n : \mathbb{P}^n \to T$ is constant, $n \geq 1$.

Solution:

NAME: STUDENT NO:

Q-3) Using Čech cohomology techniques, show that for any meromorphic function ϕ on $\mathbb{C}$, there exist two entire functions f and g such that $\phi = f/g$. (In complex analysis we prove this using Weierstrass factorization theorem.)

Solution: