# MAT 615: Complex Curves and Surfaces
# Spring 2009

## Problem Set 1
**Due on Tuesday, 2/10, at 12:40pm**

*Please write up concise solutions to 3 of the following problems; half a page for each should suffice.*

**Problem 1** (5 pts)

Let $C \subset \mathbb{P}^n$, with $n \geq 3$, be a any curve. Show that there exists a point $p \in \mathbb{P}^n$ which is not contained on any line in $\mathbb{P}^n$ meeting $C$ in at least 3 points. (this is related to p215 bottom)

**Problem 2** (5 pts)

How does the second statement of Abel's theorem on p227 imply the first?

**Problem 3** (5 pts)

The period matrix $\Omega$ on p228 is the matrix of a certain natural homomorphism with respect to certain bases. What are these?

**Problem 4** (5 pts)

Show that $\mathbb{P}^{1(d)} = \mathbb{P}^d$ (see p236).