Exam review

December 2, 2009

The final will be December 15, at 2 pm in BA 2165. You will have up to 3 hours.

There will be a review session on Dec 10 in MS 3163 (Medical Sciences building) at 2 pm. There will be office hours on Dec 14 from 1-4 pm.

The important ideas/results in the course were:

1. Nullstellensatz and the bijection between radical ideals and affine varieties

2. The notion of projective space, projective varieties, and the relations between projective and affine varieties (taking cone and homogenization/dehomogenization).

3. The definition of an abstract variety and the sheaf of regular functions on affine and projective varieties.

4. The two definitions of dimension and their equivalence.

5. The definition of tangent space, smoothness, and the calculation of tangent spaces for affine and projective varieties.

6. The notion of divisors and linear equivalence.

We covered the following sections in the book:

- chapter I, all sections

- chapter II, sections 0-5

- chapter III, sections 0-5, 8

- chapter IV all sections

- chapter V, sections 0-3

- chapter VIII, section 2

Here are some problems from the book which you might want to look at.

- Exercises: I.8, II.1, II.2, II.4, III.B.3, IV.1, IV.3, IV.5, V.2, V.6, V.9, VIII.3

- Problems: I.3, II.1, II.2, IV.1, IV.3, V

- Midterm 1991, Problem 1, Exam 1992, Problem 1.

Note that the sample midterms and final exams in the book seem really hard.