MATH 216C PROBLEM SET C3

This set is due by noon on Tuesday, May 6. Hand in your homework to me by email unless that's particularly annoying for you to do.

Please *read all of the problems*, and ask me about any statements that you are unsure of, even of the many problems you won't try. If you are stuck on any problems (including ones not assigned) — and you should get stuck — please feel free to come and talk with me.

You are encouraged to talk to each other, and to me, about the problems. If you don't know people, but would like to work together, just let me know, and I'll introduce you to others. Some of these problems require hints, and I'm happy to give them!

Hand in at least **seven** solutions. If you are ambitious (and have the time), go for more. You should try the starred problems unless you have seen them before. Problems with a plus are worth double. Other exercises are described as useful or important, so you may want to try those. Try to solve problems on a range of topics (e.g. at least one from each section you haven't seen).

Problems (from the June 11, 2013 version): 21.5.A, 21.5.B, 21.5.D, 21.5.H, 21.5.M+, 21.6.A-, 21.6.F(a), 21.7.B, 21.7.D*, 21.7.E-, 21.7.F-, 23.1.B, 23.1.D-, 23.2.C, 23.3.A, 23.3.C, 23.3.C*, 23.4.A-, 23.4.D, 23.4.F, 23.4.G, 23.5.B, 23.5.D, 24.2.J, 24.2.K(c)-, 24.2.M, 24.2.N, 24.3.A-, 24.3.E, 24.3.F, 24.4.B, 24.4.C, 24.4.D, 24.4.H, 24.4.K, 24.4.M+, 24.5.E, 24.5.F, 24.5.G, 24.5.I, 24.5.N-, 24.6.D, 24.6.F, 24.7.B*, 25.2.A, 25.2.D, 25.3.D.

Sequences that might catch your fancy:

- 21.7.K-M (bounding automorphism groups of genus g curves).
- 23.2.G-K (the category of A-modules has enough injectives).
- If you can solve 23.2.M, then that would be worth four problems.
- 24.7.F-I (Hironaka's example of a smooth proper nonprojective variety)

If you feel like other problems are interesting enough that they should be done, please do them, and I'll count them for half a problem or a whole problem (depending on how hard *you* think they are).

A **mandatory** question. (A sentence for each part suffices.) (a) Which problems did you particularly like, and why? (b) Which ones did you like less? (c) What is the most confusing topic we've discussed?

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Date: April 26, 2014.