Math 128B, problem set 04
Outline due: Wed Mar 02
Due: Mon Mar 07
Last revision due: Mon Apr 04

Problems to be done, but not turned in: (Ch. 16) 1, 3, 5, 7, 9, 11, 17, 19, 23, 29, 31, 33, 39, 41, 45, 47, 51. (Ch. 17) 3, 5, 11, 13, 15.
Fun: (Ch. 16) 48.

Problems to be turned in:

1. (Ch. 15) 46.
2. (Ch. 16) 12.
3. (Ch. 16) 22.
4. (Ch. 16) 44.
5. (Ch. 16) 40. (Careful: Compare 39.)
6. (Ch. 17) 2. Prove/explain your answer.
7. (a) (Ch. 17) 16(a).
   (b) Determine the number of polynomials of the form $(x-a)(x^2+bx+c)$ in $\mathbf{Z}_p[x]$, where x^2+bx+c is irreducible.
   (c) Determine the number of polynomials of the form $(x-a)(x-b)(x-c)$ in $\mathbf{Z}_p[x]$. (Watch out for repetitions!)
   (d) Determine the number of irreducible polynomials over $\mathbf{Z}_p$ of the form x^3+ax^2+bx+c.