Math 128B, problem set 03
Outline due: Wed Feb 17
Due: Mon Feb 22
Last revision due: Mon Apr 05

Problems to be done, but not turned in: (Ch. 15) 1–69 odd.

Problems to be turned in:

1. Let $R = \mathbf{Z}[x]$, and consider $A = \langle 2, x \rangle$ and
$$B = (2\mathbf{Z})[x] = \{a_n x^n + \cdots + a_1 x + a_0 \in \mathbf{Z}[x] \mid \text{all } a_i \in 2\mathbf{Z}\}$$
as subsets of R.
   (a) Prove that $B = (2\mathbf{Z})[x]$ is an ideal of R.
   (b) Is A prime and/or maximal? Is B prime and/or maximal? Prove your answer.
2. (Ch. 14) 38.
3. (Ch. 15) 2.
4. (Ch. 15) 16.
5. Find all ring homomorphisms from $\mathbf{Z}_{30}$ to $\mathbf{Z}_{24}$. Prove your answer.
6. (Ch. 15) 32.
7. (Ch. 15) 48.