Recitation problems for Tuesday Feb 23, 11:25am-12:15pm

1. Any previous unsolved problems.

2. (Medium-easy) Recall that in lecture we described two methods for sphere packing in $\mathbb{R}^d$: a random packing with overlaps after which some spheres were deleted, and a greedy packing that had slightly higher efficiency. Show the corresponding two calculations for packing Hamming balls of (fixed) radius $R \in \mathbb{N}$ in the Hamming cube $Q_n = \{0, 1\}^n$. Refer to the end of lecture 3 and beginning of lecture 4 for definitions about the Hamming cube.

3. (Medium) Compute the expected value of $z^*$ in the improved matching algorithm presented in lecture 10. Convincing evidence presented with a computer algebra system is acceptable. The derivation may include some subtle conditional probabilities. Be sure to make a clean presentation.

4. Apply the alteration/deletion method to a question pertaining to your own research. You must convince the audience that the question you address is reasonable, but do not necessarily have to do a complex calculation.