Math 136, Homework 3, due 02/13

The most likely date of the first midterm is Feb. 27. I will make a
definite announcement by Feb. 13.

During the week of Feb. 4 and 6, we shall cover the last bit of chapter
2, chapter 3 and part of chapter 4.

We are going to omit section 5 from chapter 3. You should read sections
4 and 6 of chapter 3, but we won’t spend much class time on them. Also,
don’t worry about example 5.5 from Chapter 2 (the Ackermann function).

The exercises are due 5pm on Feb. 13 on gradescope.

Exercises due Feb. 13:

• (This exercise concerns the proof of theorem 2.2, in the direction $R \subseteq C$, which we gave in class.) Let $P$ be the URM

$$P = \langle T(2,3), J(1,2,1) \rangle.$$  

Show that the predicate $\text{Next}^P$ which we defined in class is primitive recursive. (Recall that $\text{Next}^P(i,j)$ holds iff $i$ codes a computation stage $(a,r)$, and $j$ codes the stage $(b,t)$ that results from $(a,r)$ by using the instructions of $P$. You should use the coding of finite sequences using powers of primes that I used in class.)

• From Chapter 3: 7.2, parts 1, 2, and 4 (page 71).

• From Chapter 4: 3.2, parts 1 through 4 (page 80).