Today Preliminaries; recursion theorem recap. § 0.∗ (thoroughly); § 6.1 (the best you can).
Next class Finite-state automata. § 1.1, 1.2.

1. List the members of your group below. Underline your name.

2. Use the scheme described on p. 247 of the textbook to generate a concrete implementation of the *self* program.

   Ask questions and use group discussions to clarify ideas.

   Explain how your program works by detailing the correspondence between its elements and those in the description.

3. Let $A = \{1, 2, 4, 8, 16, \ldots, 1024\}$ and $B = \{n \in \mathbb{Z} \mid 0 < n \leq 100 \wedge \sqrt{n} \in \mathbb{Z}\}$.

   (a) Provide a compact implicit definition of A.

   (b) Enumerate the elements of B.

   (c) Enumerate each of the following. You may abbreviate if the result is clear and unambiguous.

      i. $A \cup B$

      ii. $A \cap B$

      iii. $A \setminus B$

      iv. $A \times B$

      v. $\mathcal{P}(B)$

4. With all variables ranging over the set $\mathbb{Z}$, for each of the following logical sentences, (1) provide a brief but precise English equivalent, (2) provide a prenex normal form equivalent, and (3) either prove or disprove it.

   (a) $\forall y \exists x [\nexists w [w = x^2] \wedge \exists z [x < y < z]]$

   (b) $\exists x \forall y [\nexists w [w = x^2] \wedge \exists z [x < y < z]]$