1. Consider the following TM with input alphabet \{0, 1, 2\}.

(a) List two strings accepted by this TM.
(b) List two strings not accepted by this TM.
(c) Describe in English the language of this TM. Be precise.

2. Draw a TM that converts from unary to binary. That is, if the input is $k$, it leaves $k$ in binary on the tape.

3. Suppose one has a TM $M$ for language $L$. Describe in English how to build a nondeterministic TM for language $L^*$.

4. Describe an algorithm that determines the shortest RE for an input DFA. Estimate the running time of your algorithm.

5. Define a twice-change Turing Machine (TCTM) as one that can alter each tape cell at most twice. Show that a TCTM has the same power as a standard TM.

Due: Monday November 6