

# CSE 725 - Problem Set 1

## Due lecture on April 28th

Problem numbers are from the second edition of Sipser's book. If unsure about which problem to solve, ask. Collaboration is permitted; looking for solutions from external sources (books, the web, etc.) is prohibited.

1. Give a formal description (i.e. including the state diagram of the transition function) of a TM that recognizes

$$\{u\#v : u, v \in \{0, 1\}^* \text{ and } u \text{ is } v \text{ with each bit negated}\}$$

2. 3.15 b

(The concatenation of two languages  $L$ ,  $M$  is the language  $\{vw : v \in L, w \in M\}$ )

3. \* 3.19

4. (extra credit) \* 3.20

5. 5.9

( $w^R$  is the reverse of  $w$ )

6. 5.22