Name:\_\_\_\_\_

\_ Grade:\_\_\_\_<-- instructor use

1. Over a given alphabet  $\Sigma$ , how many regular languages are there? Why?

2. How do we know that every finite language is regular?

- 3. How many states in a FSM that represents the legal moves in the famous Towers of Hanoi problem? (64 disks)
- 4. If  $L \cap M$  is regular, does that imply that L is regular?
- 5. If an n-state DFSM M accepts a string of length n, what can we say about |L(M)|? Why?
- 6. The pumping theorem for regular languages:If a language L is regular, then

∃k≥1 (

)

Rewrite the contrapositive form of pumping theorem (informally, if some long enough string in L is not pumpable, then L is not regular):

If  $\forall k \ge 1$  (

) then L is not regular.

8. Tell your instructor about anything from today's session (or from the course so far) that you found confusing or still have a question about. If none, please write "None".