**Weekly Proof #7 – 4.1 Grading Criteria**

For all questions: Give partial credit in a category when you deem appropriate.

1) 10 pts
   - 5 pts – running a BFS and marking all reached states
   - 5 pts – checking to see if all marked states are accept states, etc.
   OR
   - 5 pts – Modifying input DFA to switch accept and reject
   - 5 pts – Sending modified DFA as input to TM that decides $E_{DFA}$

2) 13 pts
   - 5 pts – Running DFA on all strings of length $n$ to $2n$.
   - 5 pts – For accepting if any of those strings are accepted
   - 3 pts – For the rationale behind the algorithm

3) 15 pts
   a) 3 pts – 1 pt for pushing 0s, 1s onto two stack,
      1 pt for popping off a 0 and 1 for each.
      1 pt for checking for $\$$ at bottom of each stack
   b) 12 pts – 5 pts – having one stack store left of tape head
      5 pts – having other stack store right of tape head
      2 pts – Brief description of executing a transition.

4) 12 pts
   - 2 pts – for saying it’s decidable.
   - 5 pts – Looping through all integers (1 to n-1) and checking for divisibility
   - 5 pts – Adding only the divisible ones and checking if the sum equals n