Daily Proof #1 – 1.4 Grading Criteria

Grading Directions: Pick a random permutation of 1, 2, 3, 4 and 5 using the program I give you. Call the permutation a, b, c, d and e. Grade question a on the first paper, question b on the second paper, question c on the third paper, question d on the fourth paper and question e on the first paper. If there are fewer than four papers, wrap around accordingly.

1) 10 pts

- Picking ANY string to pump – 1 pts
- Picking a string of length p or greater – 1 pts
- Considering all ways to split up the string – 2 pts
- Showing how many times to pump the string – 2 pts
- Properly writing out the resultant string – 1 pts
- Having the proof actually work (namely, their pumped string isn’t in L) – 4 pts

2) 10 pts

- Saying that if the intersection isn’t regular, then both of the languages separately can’t be (statement contrapositive) – 5 pts
- Deducing from this that L₂ isn’t regular – 5 pts

3) 10 pts

- Picking a regular language for L₁ – 2 pts
- Picking L for L₂ – 2 pts
- Correctly showing the intersection of these two – 2 pts
- Arguing why this intersection is not regular – 2 pts
- Concluding that L₂ isn’t regular – 2 pts

4) 10 pts total

- Explaining why a string with 0 or 2 or more a’s won’t work – 3 pts
- Considering the case of a string with 1 a specifically – 3 pts
- Explaining how any string of this form can be pumped – 4 pts

5) 10 pts total

- 1 pt for each ordered pair in the algorithm trace (there are 9 pts)
- 1 pt for the final DFA