CS 321 Quiz 2 (20 min., 5 pts) October 9, 2015

Last Name = _____, First Name = _____

ONID login = = _____@oregonstate.edu

1. (0.5pts) Under what condition does a DFA M recognize the empty language? Use the mathematical language (δ^*, $\forall$, $\exists$, etc.)

2. (2.5pt) Prove $(u^R)^R = u$ for any string u.

   (0.5pts) First define reverse:

   (2pts) Now prove by induction (on _____); please clearly mark base case, inductive hypothesis (IH), by definition, and by IH. (Hint: You can use the theorem from HW2 that $(xy)^R = y^R x^R$.)

3. (1pt) Draw the following two DFAs:
   (a) "binary number divisible by 4" (3 states) | (b) "binary number divisible by 3"

4. (1pt) Use the table-filling algorithm to show that the two above machines are not equivalent.