Stefanie Shidoosh

CS 181 HW9

1a. ()
B
S

b. () ()
B ()
B B
B S
B

c. ~~$u_1 = ()$~~
~~$u_1 = B$~~
Note that in 1A, the reduction of string () has intermediate string B, where the reducing rule $S \to B$, which is an unforced handle.
Note that in 1B,

I don't know, I'm sorry. 

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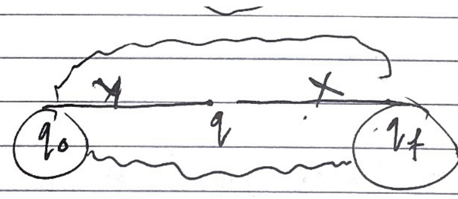
2. Consider:
L's DFA



~~Let q_0 be the initial point/start state,~~
Let q_0 be the start state, q_f the accepting state,
and q is any point between a string $w \in L$.
Constructing the NFA from L's DFA, ~~for RE~~ for RE(L)

$[q, q] \xrightarrow{x} [q, q_f] \quad [q, q_0] \xrightarrow{x} [q, q]$

This accepts when the first element matches up with its second element, where $\delta_{NFA}([p, q], a) = [p, \delta_{DFA}(q, a)$,
p is start state, q is current state, $a \in \Sigma^*$.

3. L_3 is Non-R.E.
The domains of ~~the~~ computable partial functions constitute all recursively enumerable sets.
So, let $W_{f_n} = \text{domain}(f_n)$, where f_n is computable partial function
Consider $W_{f_n} \in L_3$, n would be needed in L_3 but not in W_{f_n}.
If $n \in L_3$, then f_n doesn't halt when given input n.
$W_{f_n} \neq L_3$, and thus L_3 is not equivalent with any recursively enumerable set.