

Com S 331  
Fall 2009  
Homework #5

Due Friday, October 2, at beginning of class.

33. p. 303 problem 1.
34. p. 318 problem 8.
35. p. 319 problem 11(a).
36. p. 319 problem 11(b).
37. p. 320 problem 15.
38. p. 321 problem 18(i).
39. p. 321 problem 18(ii).
40. Let  $A$  be the set of all  $x \in \{0, 1\}^*$  such that  $\text{bnum}(x)$  is divisible by 3. Recall that we designed a 3-state DFA that decides  $A$ . Prove: If  $M$  is a 2-state DFA, then  $L(M) \neq A$ .