1. (6 pts) What is the output (if any) of the following Ruby program? Write FAIL if code does not compile or if executing the code throws a runtime exception.

   a. `a = 0`  
      `puts "a++ = #{a+1}" if a`  
      `puts a`  
      # OUTPUT =

   b. `b = [1, 2, 3]`  
      `b.each { |c| puts c }`  
      # OUTPUT =

   c. `if "route66" =~ /[^a-z]+/`  
      `puts $1`  
      `puts $2`  
      `else`  
      `puts "None"`  
      `end`

      # OUTPUT =

2. (6 pts) Construct a NFA for the regular expression `x|y*`. You must use the algorithm described in class for full credit.
3. (8 pts) Convert the following NFA into a DFA by applying the subset construction algorithm discussed in class. Be sure to list the NFA states represented by each DFA state.