Problem 1

Is the following language regular? Prove your answer. $\Sigma = \{0, 1\}$

$L = \{w \mid w \text{ has an equal number of 01 and 10 substrings}\}$

Problem 2

Is the following language regular? Prove your answer. $\Sigma = \{a, b, c, d\}$

$L = \{a^m b^n c^q d^r \mid m + n = r + q\}$

Problem 3

Convert the following NFA into an equivalent DFA. Please submit your solution to the Gradescope autograder as P3.txt, using the FSA syntax that was provided in HW6.