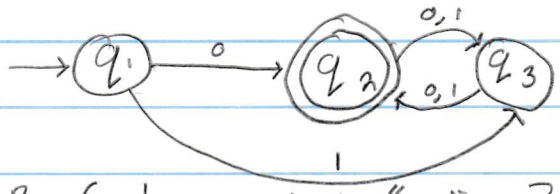
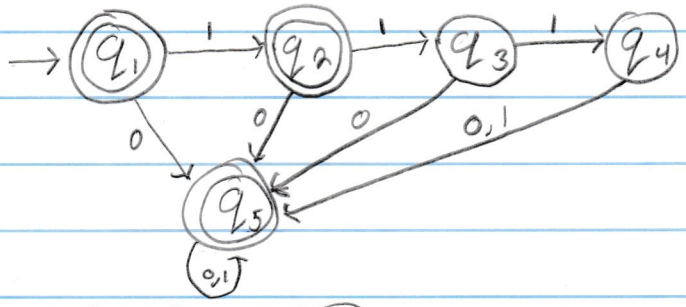
Thatcher Rickertsen - Formal Languages - HW 02

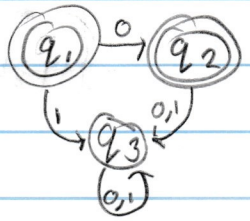
1) a) $A = \{w \mid w$ starts with 0 and has odd length, or starts with 1 and has even length.$\}$



b) $B = \{w \mid w$ is not "11" or "111"$\}$



c) $C = \{\epsilon, 0\}$ →



2) Proof: Show that if A and B are regular languages, then A - B is also regular.

- A language is regular if there is some FA M such that $L(M)$ = that language.
- Let M_A and M_B so $L(M_A) = A$ and $L(M_B) = B$.
- Note that for A - B (hereby referred to as C), $C = \{a \in A \mid a \notin B\}$
- By definition, C must be a subset of A since only elements in A can be in C.
- Since M_A recognizes every string in A, and since C is a subset of A, M_A recognizes every string in C as well, making it regular □.