Prob. 1	Prob. 2	Prob. 3

Team members: Küng, Pirelli, Schubert, Dousse, Vu

Problem 1.

1) First let's convert the DFA to an NFA A', which is A with all state transitions reversed.

2) Convert A' to a DFA A" (using techniques we saw in class)

3) Compare A and A" (using the technique we saw in class, section 2.3 of lecture notes 5)

4) If they accept the same entries, accept, else reject.

Problem 2.

    Let's take the Turing-Machine recognizing C. And modify it to stop after x, not reading the rest of the input. As the language can recognize and decide C, it can decide a substring of C, as there is no loop. Therefore R is Turing-Recognizable.

    As a decidable language is a subset of a recognizable language, if we can decide on a substring of an input of C, we can decide the substring.

Problem 3.

Let C be x,y where x is anything, y is empty, and the separator is encoded as the empty string. Then all x in R have an y such that x,y is in C.