should be that M accepts this string.

MATH 4LT/6LT3 Assignment #4
Due: Monday, 10 November by 11:59pm.

1. Recall that the language

$$SAP = \{\ulcorner M \urcorner \mid M \text{ is a DTM that halts on input } \ulcorner M \urcorner\},$$

is the Self Acceptance Problem. We saw that this language is CE but not coCE. Let $L = 0 \cdot SAP \cup 1 \cdot \overline{SAP}$. So a string from $\{0,1\}^*$ is in L if it is of the form 0σ, where $\sigma \in SAP$ or of the form 1σ where σ is in the complement of SAP. Prove that L is not CE and is also not coCE.

2. Exercise 2.10.15 from the textbook.

3. Exercise 2.10.16 from the textbook.

4. Exercise 2.10.18, part 1 from the textbook.

5. Exercise 2.10.24 from the textbook.

The following question is for students enrolled in MATH 6LT3. Students in MATH 4LT3 can treat it as a bonus question.

B1 Exercise 2.10.39.