2. Reduction (4 points)

Define the language

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$$\text{Unique} = \big\{ \langle M \rangle, w \mid L(M) = \{w\} \ \& \ M \text{ is a Turing Machine} \big\}.$$

1. Show that Member $\leqslant_m$ Unique.

Use Unique as a Subroutine to Solve member
Since Q unique is more complex Or equally complex
to member.

Member

Let M' Simulate M for input Z

1) IF M halts and accepts then M' Halts and accepts

2) IF M halts and rejects then M' loops infinitely
w' = w

⟨M,w⟩ →

⟨M',w'⟩ → Alg for Unique → Yes → Yes,
No → No,

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