Question 1. [100 points] Define the lacing of two languages \( A \) and \( B \) as \( \text{lacing}(A, B) = \{ xyx \mid x \in A \text{ and } y \in B \} \). Prove that if \( A \) and \( B \) are r.e. sets, then \( \text{lacing}(A, B) \) is an r.e. set. (Hint: Be careful not to get tripped up with any issue related to the empty string, or with any issue related to your not coordinating to make sure that in \( xyx \) it is the same “\( x \)” in both places.)