CMPE 350 - Spring 2016

PS 4 - 09.03.16

1.46 Prove that the following languages are not regular. You may use the pumping lemma and the closure properties of the class of regular languages under union, intersection and complement.

b) $L = \{0^m 1^n | m \neq n\}$

d) $L = \{wtw | w, t \in \{0,1\}^*\}$

- Show that $L = \{010^n 1^n | n \geq 0\}$ is not regular.
- TRUE or FALSE
  1. If $L_1 \cup L_2$ is regular and L_1 is regular, then L_2 is regular.
  2. If L_1 is regular and $L_2 \subseteq L_1$, then L_2 is regular.
  3. If L_1 is regular and L_2 is not regular, then $L_1 \cup L_2$ is not regular.
  4. If L_1 is regular and $L_1 \cup L_2$ is not regular, then L_2 is not regular.
  5. If L_1 is regular and L_2 is not regular, then $L_1 \cap L_2$ is not regular.
  6. If L_1 is not regular and L_2 is not regular, then $L_1 \cup L_2$ is not regular.
- Prove that regular languages are not closed under infinite union.