

Worksheet # 8

MATH 294 ESP Workshop

Spring 2016

Problem 1. Let W be the set of words in the English language. For two words w_1 and w_2 we write $w_1 \sim w_2$ to mean that w_1 and w_2 share a common letter.

- (1) Find three words w_1, w_2 and w_3 so that $w_1 \sim w_2$ but $w_2 \not\sim w_3$.
 - (2) True or False: For any $w \in W$, $w \sim w$.
 - (3) True or False: For any $w, u \in W$, if $w \sim u$ then $u \sim w$.
 - (4) True or False: For any $w, u, v \in W$, if $w \sim u$ and $u \sim v$ then $w \sim v$.
 - (5) True or False: For any $w \in W$ there exists a $u \in W$ so that $w \not\sim u$.
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Problem 2. Do problem 1 but replace $w_1 \sim w_2$ to mean that w_1 and w_2 share the same first letter.

Problem 3. Do problem 1 but replace $w_1 \sim w_2$ to mean that w_1 and w_2 share the same second letter.
