

**Pework 1.4a: The Pumping Lemma**

Write your preliminary solutions to each problem and submit a PDF on Canvas. The names in brackets indicate the subset responsible for presenting the problem.

1. [Todd, Andrew, Joshua, Allie] Read Example 1.75 on page 81. The last line of the third paragraph states, “With condition 3 the proof follows because  $y$  must consist of only 0s, so  $xyyz \notin F$ .” Explain, in more detail than is given in the book, why  $xyyz \notin F$ .
2. [Ky, Micah, Curtis, David] In the last sentence of Example 1.75, it says that the string  $0^p 0^p$  “can be pumped.” Explain, what this means, and, specifically, how it can be pumped.
3. [Ben, Levi, Meghan, Connor, Grace] Use the Pumping Lemma to show that the language  $A = \{www \mid w \in \{a, b\}^*\}$  is not regular.

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BEGIN YOUR SOLUTIONS BELOW THIS LINE

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