

## Problem 1 (CO5): Pumping Lemma Practice (10 points)

Show that the following languages are not regular using the pumping lemma.

- (a)  $L_1 = \{0^n 1^n 2^n \mid n \geq 0\}$
- (b)  $L_2 = \{1^n \mid n \text{ is a power of two}\}$

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**Hints:** For (a), Exercise 1.73 from Sipser should help. For (b) Exercise 1.76 should help. [This video](#) might also help.