

Formal Languages, Grammars and Automata

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4. The pumping lemma

Let $\Sigma = \{a, b\}$.

- 4.1. 1. Given is a PFA M_1 by the following table

δ	a	b
0	1	2
1		3
2	3	
3		

Draw this machine and give examples and non-examples of words in its language.

2. Consider the PFA M_2 given by

δ	a	b
0	1	2
1	2	3
2	3	1
3		

Draw this machine and give examples and non-examples of words in its language.

3. Consider the NFA M_3 given by

δ	a	b
0	1	2
1		2, 3
2	1, 3	
3		

Draw this machine and give examples and non-examples of words in its language.

- 4.2. Show that the $L(M_1), L(M_2), L(M_3)$ all satisfy the pumping lemma.