TOC - Assignment I   Due Date 20/4/2021
Submit your answers to easwarakumarks@gmail.com

① Prove the following using mathematical induction
$$(w^i)^R = (w^R)^i, \text{ for any string } w \text{ and } i \geq 0$$

② Construct a DFA to accept
$$\{w \in \{a,b\}^* : w \text{ has odd number of } a\text{'s and even number of } b\text{'s}\}$$

③ Draw state diagram for an NFA that accepts.
$$\left(\left(a^* b^* \dot{a}\right)^* b\right)^*$$

④ Prove that $\{a^n b a^m b a^{m+n} : m, n \geq 1\}$ is not regular.

⑤ Show the following language is context-free by exhibiting CFG
$$\{a^m b^n c^p d^q : m+n = p+q\}$$