1. Let $\Sigma = \{a, b, c\}$ and $L_1 = \{w \in \Sigma^* \mid w$ does not contain the substring $abc\}$.

Design a DFA which accepts $L_1$. Show your solution as a transition graph and explain clearly why it is correct.

2. Give a DFA for the language

$$L_2 = \{ab^5wb^2 \mid w \in \{a, b\}^*\}.$$ 

3. Show that

$$L_3 = \{a^n \mid n \geq 4\}$$

is regular.