

**Solution to CS421 Homework 8**

**Group members' netids: mrlu2, ackerma9**

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$$L_1 = 0(01 \vee 10 \vee 1)^*$$

$$l_2 = (01 \vee 10)^*$$

$$L_3 = (01 \vee 10 \vee 00 \vee 11)^*(0 \vee 1)$$

$$L_4 = (acb \vee cba \vee c \vee a \vee ac \vee cb \vee ca)^*$$

Language 5 is not regular if  $a \in w$  is regular then so must  $a^*$  however if  $\text{---}a\text{---}$  is a perfect cube then  $|aa|$  must as well be a perfect cube but we know this not to be true.