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COS 210 Worksheet 5

- This worksheet consists of **4 questions** for a total of **12 marks**.
- Show your working for all calculations and reasoning.

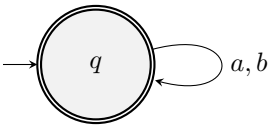
Question 1 ..... (4 marks)

Convert the following regular expression to an NFA over the alphabet $\Sigma = \{0, 1\}$ using the method from Lecture 9. **In your solution you must also provide the NFAs for each sub-expression of the overall expression.**

$$(0 \cup 1)^*000(00 \cup 11)$$

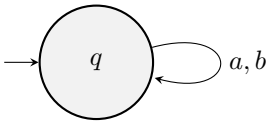
Question 2 ..... (2 marks)

Convert the following DFA to a regular expression over the alphabet $\Sigma = \{a, b\}$. Do not simply write an answer. You must build an equation system and solve it as presented in Lecture 10. Show all steps.



Question 3 ..... (2 marks)

Convert the following DFA to a regular expression over the alphabet $\Sigma = \{a, b\}$. Do not simply write an answer. You must build an equation system and solve it as presented in Lecture 10. Show all steps.



Question 4 ..... (4 marks)

Convert the following DFA to a regular expression over the alphabet $\Sigma = \{a, b\}$. Do not simply write an answer. You must build an equation system and solve it as presented in Lecture 10. Show all steps.