MCAA lecture 5: quiz

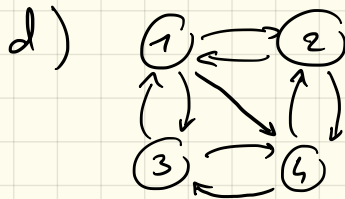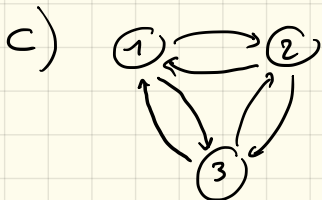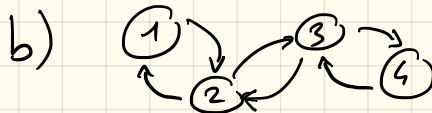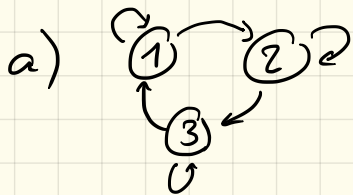1) Which of the following chains do possibly/surely admit a stationary distribution which satisfies detailed balance?

a)

b)

c)

d)

e)

f)
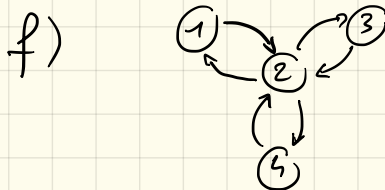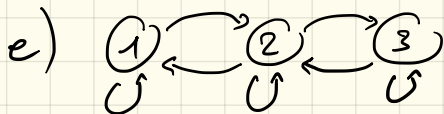
2) Can an ergodic & reversible chain be periodic with period $d > 2$?

3) Let $\lambda_0 \geq \lambda_1 \geq \ldots \geq \lambda_{N-1}$ be the eigenvalues of the matrix P as defined in the lectures.

a) Can you imagine a (simple) chain where $\lambda_k \geq 0$ $\forall 0 \leq k \leq N-1$?

b) Can you imagine a (simple) chain where $\lambda_k \leq 0$ $\forall 1 \leq k \leq N-1$?

c) Can you imagine a (simple) chain where $\lambda_k = 0$ $\forall 1 \leq k \leq N-1$?

NB : You are free to choose the value of N !