In-class Exercise 1: Solution

Wednesday, February 19, 2014 2:52 PM

In-class exercise #1

① Draw the complete state diagrams of the MCG

with i) $m = 7$ $a = 2$

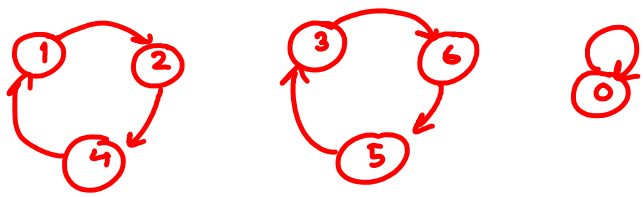
ii) $m = 7$ $a = 4$

iii) $m = 7$ $a = 5$

Solution

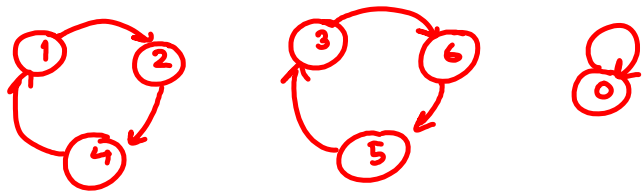
i)

x	ax
1	2
2	4
4	8
1	
x	ax
3	6
6	12
5	10
3	



ii)

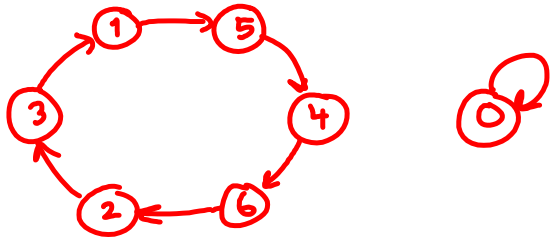
x	ax
1	4
4	16
2	8
1	
x	ax
3	12
5	20
6	24
3	



iii)

x	ax

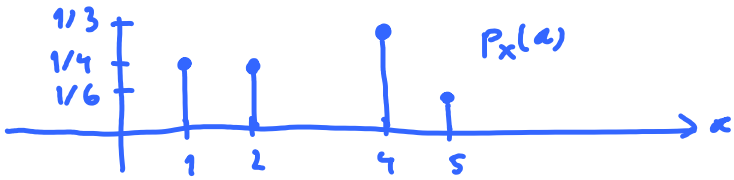
1	5
5	25
4	20
6	30
2	10
3	15
1	



(2) Carefully sketch the cdf of a RV X whose pmf is given by

$$P_X(x) = \begin{cases} 1/4, & x = 1, 2, \\ 1/3, & x = 4, \\ 1/6, & x = 5, \\ 0, & \text{otherwise.} \end{cases}$$

Solution



By definition, $F_X(x) = P[X \leq x]$