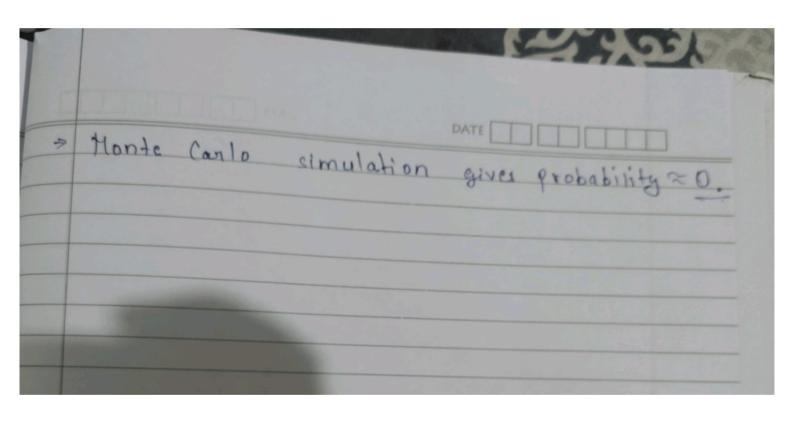
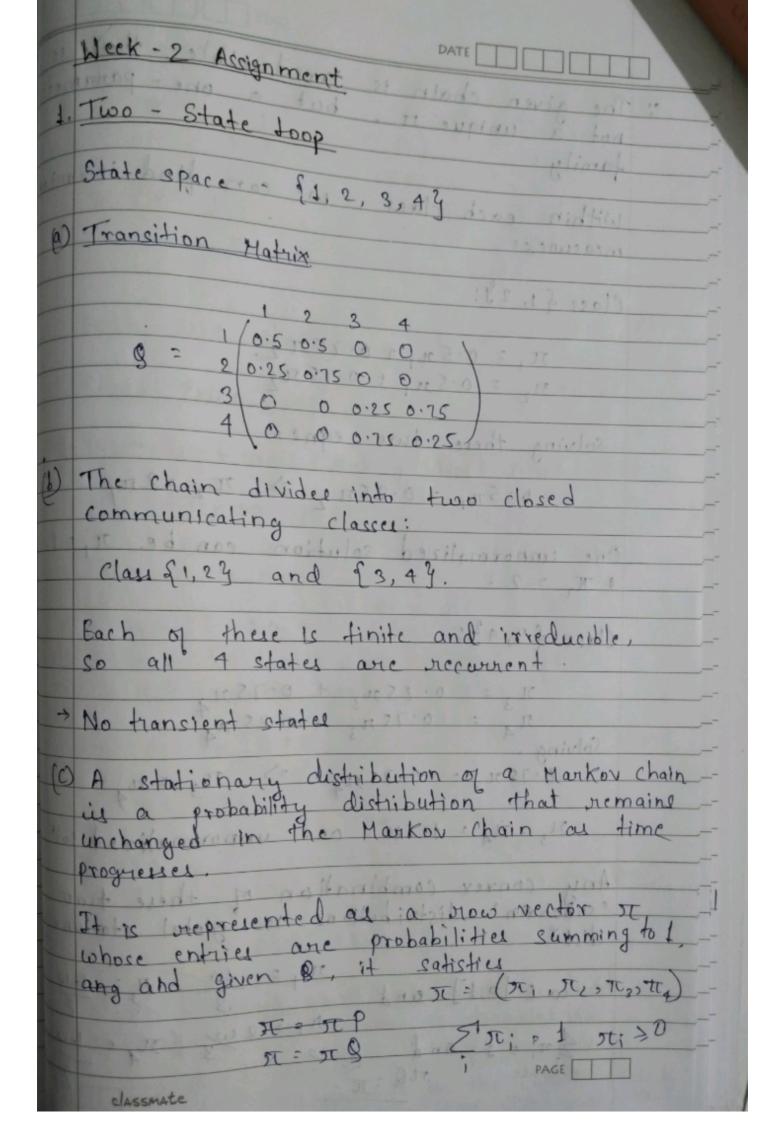
A. Challand St.	T. PAUL SCHOOL AMSWER SHEET
Name of Student	Examination 20 - 20
Roll No.	Date
Subject	Examiner Signature
Parent Signature	- all pickers
- signature	Class Teacher Signature
we have two	states of win los and outcom
having dinner by	ogether
,	year i when the
	win current) = 0.8
P Nos nent	win avvent) = 0.2
P won next	(lose current) =0.3
10 LOS NENT	lose current = 0.7
P (dinner win)	=0.7
P (dinner win) P (dinner lose)) = 0.2
and the sales	W
the transition	matrix would be w [0.8 0.2]
The Charles and	20.30.7
1 7. W & 7	1-60 8-10 1 10 1 18 1 1 1 1 1 1 1 1 1 1 1 1 1 1
let Tw 4	The steady-state prob of winning
at Steady 36	968 Tw = 0.8 Ty +0.3 TL
3	TW+TL=1
801h	ing these we got
	Tw=0.6 7 = 0.4
. .	beam wing 60% of the game in
	746

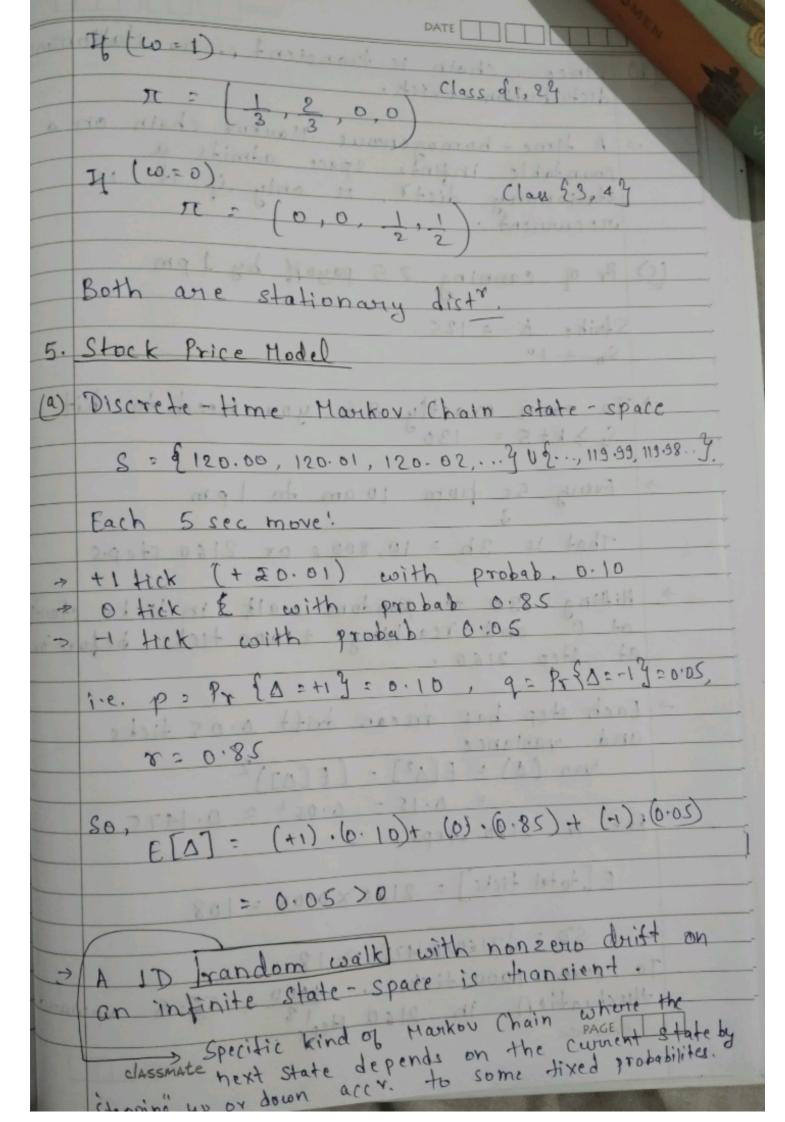
P(dinner) = P(dinner/min) x P(min) + P(dinner/lose) x P(cox) P (dinney) = 0.4 x0.6 + 0.2 x0.4 = 0.5 50% of games result in a fear dinner in the long run (3) As proby of having dinner ofter any given game is of. & each game is indpt trial, expected waiting line follows a Geometric distribution. expected games = 1 = 2 g6) as the probability of going from g to h in one single step is 0. It is not o whom we can obtain h from 9 by swapping two ontries of second how. In this case it is 1 he cause there are 2660 swaps which is equally cikely. The stationary permutation distribution is uniform distrib oner all 26 permutations hecause me can perform enough swaps to goo go from one permut to another

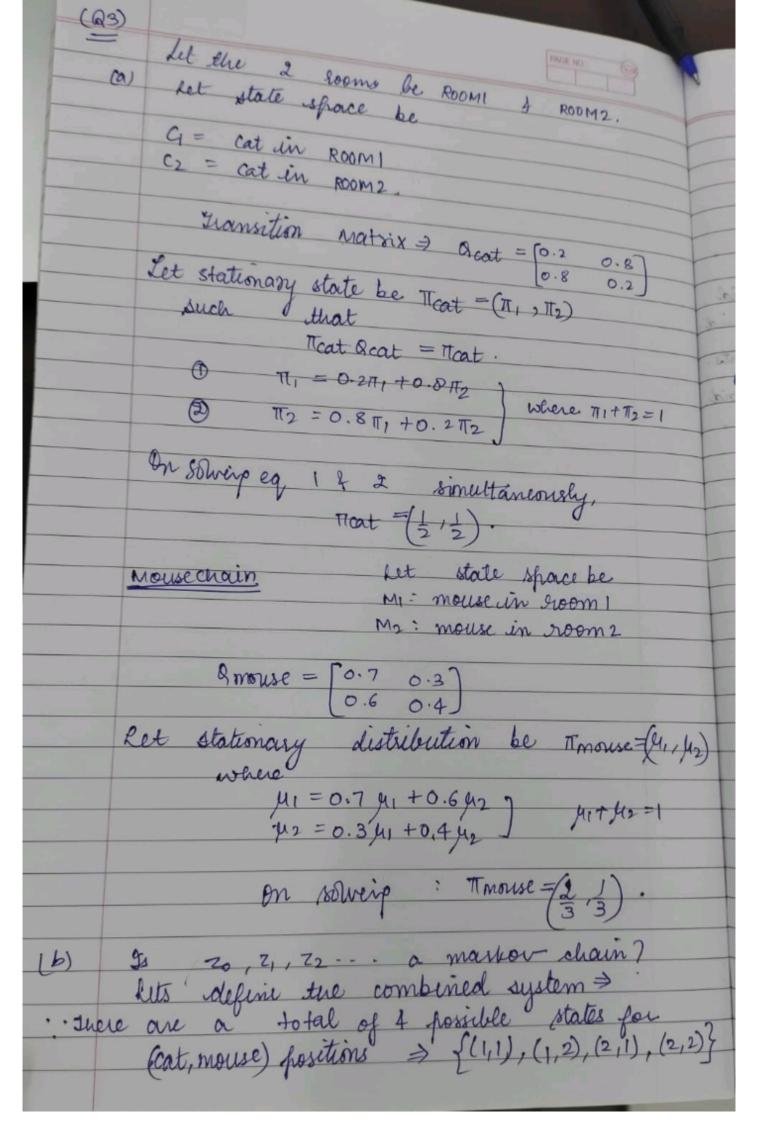


	DATE
••	The given chain is irreducible, there is not a unique re, but a one-parameter family.
. 23	within each class, we can find invarious
186	Class & 1, 29!
	π, = 0.5π, + 0.25π2. π, = 0.5π, + 0.75π2
	Solving there two egns,
	6.57 = 0.25 7 2 = 1 To 2 = 2 56, 1
	One unnormalized solution can be II, = 1
	Class & 3, 4 9: 10 stinit
	$T_3 = 0.25\pi_3 + 0.75\pi_4$
	Solving, = 0.75 123 + 0.25 124
5	8.75713 = 0.75512 => 573 => 7
	one unnormalized soln.
36	Any convex combination of these two "subchain" distributions is global stationary distributions
	w [[0,1] and 3 7 2
30	276, 23 400
	classmate JtQ: T., PAGE TO

b) Since Chain is transient. no stationary distribution exist. A time-homogenous Markov chain on a countable infinite space admits a stationary distr. It only if It is vice current. C) Pr of carning 25 payoff by 1 pm Strike K = 125. So = 10 To earn exactly 25 you need to hit strike K = 125. > To earn exactly 25 you need to hit strike 5 = 130 That is 3h = 10,800 s or 2160 steps Hitting 13b - Random walk in ticks startly at 0 and reacting those ticks before or at step 2160. -> Each step has mean drift 0.05 ticks and variance Van (A) = E[A ²] - (E[A]) For N: 2160 steps: E [total ticks] = 2160 x 0.05 = 108.	DATE
A time-homogeneous Markor chain on a countable infinite space admits a stationary distr. It only if It is recurrent. () Pr of cauning 25 payoff by 1 pm Strike k = 125. So = 10 To earn exactly 25 you need to hit St > k+5 = 130 That is 3h = 10,800 s or 2160 steps Hitting 13b -> Random walk in ticks startly at 0 and reacting those ticks before or at step 2160. Each step has mean drift 0.05 ticks and variance Van (A) = E[A2] - (E[A]) ² For N: 2160 steps E[total ticke] = 2160 × 0.05 = 108.	(b) Since chair is
A time-homogeneous Markor chain on a countable infinite space admits a stationary distr. It only if It is recurrent. () Pr of cauning 25 payoff by 1 pm Strike k = 125. So = 10 To earn exactly 25 you need to hit St > k+5 = 130 That is 3h = 10,800 s or 2160 steps Hitting 13b -> Random walk in ticks startly at 0 and reacting those ticks before or at step 2160. Each step has mean drift 0.05 ticks and variance Van (A) = E[A2] - (E[A]) ² For N: 2160 steps E[total ticke] = 2160 × 0.05 = 108.	distribution is transient, no stationary
countable infinite space admits a stationary distr. It only if It is recurrent. (c) Pr of carning 25 payoff by 1 pm Strike k = 125 So > 10 To earn exactly 25 you need to hit St > kt5 = 130 That is 3h = 10,800 s or 2160 steps. Hitting 130 - Random walk in ticks startly at one of step 2160. Hitting 130 - Random walk in ticks startly at Step 2160. Each step has mean drift 0.05 ticks and variance wan (A): E[A2] - (E[A]) ² For N: 2160 steps. E [total ticks]: 2160 x 0.05 = 108.	
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Stationary dist? It only if It is victurent. (C) Pr of couning 25 payoff by 1 pm Strike k = 125. So = 10 To earn exactly 25 you need to hit Strike story 55 tom 10 am to 1 pm That is 3h = 10,800 s or 2160 steps. Hitting 130 - Random walk in ticks startly at 0 and reacting t1000 ticks defore or at step 2160. Each step has mean drift 0.05 ticks and variance Var (A) = E[A ²] - (E[A]) ² For N: 2160 steps; E [total ticks] = 2160 x 0.05 = 108.	countable intinde come alite
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E[total ticke] = 2160 × 0.05 = 108	C10 U , 1
Van (A) = $E[A^2] - (E[A])^2$ = 0.15 - 0.05 = 0.1475 For N = 2160 steps; $E[total ticks] = 2160 \times 0.05 = 108$	-> Each step has have 1111
Van (A): $E[A^2] - (E[A])^2$ = 0.15 - 0.05 \(^2\) \(0.1475\) E[total ticks] = 2160 \(^2\) \(0.05 = 108\)	and variance
For N: 2166 steps;	Van (A) = E[12] - (E[17]2
E[total ticke] = 2160 × 0.05 = 108	= N.15 - N.05 - N.
E[total ticke] = 2160 × 0.05 = 108	For N: 2160 Henc
	ELtotal ticke = 2160 x DODE = 100
12160X0:1475/2019	To cover 1000 tick
To cover 1000 ticker, 1000	To cover 1000 ticke 1000
Mucheation in 2160 de 18 = 55.5 upward	Hucheation in 2160 4018 = 55.5 upward
To cover 1000 ticks, 1000 55.5 upward Hucheation in 2160 steps PAGE TI	classmate







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So state space of zn >
mark of Zn + PAGENO
(Zn) vis a Markov (ha:
(-1) (21) (21) (4=(21))
(20) us a Markorry Mari
Transition Riobalitet.
ces (i,j) to $2n+1=k(0)$
(Zn) is a Markov Chain. Transition Probability of $z_n \Rightarrow (i,j)$ to $z_{n+1} = k,l$ $(z_n) = (k,l) \mid z_n = (i,j) \mid z_n = (i,j)$
$= P(c_n+1 = k c_n=i).$
Product of Individual Transitions = ratisfies MARKOV PROPERTY.
Manaplions = ratisfies MARKOV
PROPERTY.
TYPE lanting malore
O CORNER (1,1), (1,8), (0,1), (0,0) 3 4
7.7.(8/1),(8/8) 3 4
@ GDGE Along borders 5: 24
(Not corners) 5
A
(3) INNER EDGE Squares next 8 36 to borders (not onit)
@ CENTER none of above 8 36
4 CENTON TOTAL STATE OF THE STA
Q. A. d. adaption
In such chains
In such chains T(i) & deg (i) number of legal moves from squares i In order to find probabilities:-
mumber of legar metal family
In order les finoi probabilités.
T=3=L
Corner Square $T = \frac{3}{420} = \frac{1}{140}$
Edge Square, $T=\frac{5}{420}=\frac{1}{87}$
9 uterior square, $7 = 0 = 2$ 420 105
2 = 2
Inner Edge Squares = 0 = 2 420 103
These are the stationary probabilities for them.
Muse are the stallondry
July