

SECI 1013 - DISCRETE STRUCTURE

SEMESTER 1 2023/2024

SECTION 02

ASSIGNMENT 2 (CHAPTER 2)

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Date: A = {1,2,3,4,5} 3. R = {(1,1),(2,2),(3,3),(4,4),(5,5),(3,2),(3,4),(4,1), (4,5), (5,4)} digraph of R: ን in - degrees 2 2 out - degrees 3 A = {0,1,2,3,4} 4. R = { (0,0), (0,1), (0,3), (0,4), (1,0), (1,1), (1,2), (2,1), (2,2), (2,3), (3,0), (3,2), (3,3), (3,4), (4,0), (4,3), (4,4)} digraph

R is reflexive because {(0,0),(1,1),(2,2),(3,3),(4,4),(5,6)} ER

$$M_{r} = \begin{bmatrix} 1 & 1 & 0 & 1 & 1 \\ 1 & 1 & 1 & 0 & 0 \\ 0 & 1 & 1 & 1 & 0 \\ 1 & 0 & 0 & 1 & 1 & 1 \end{bmatrix}$$

.. R is symmetric because Mr = MrT

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	To the second se	1	1	ı	O	0		1	1	1	0	0	-	1 1	1	1	1
		0	1	1	ľ	0	8	0	1	1	1	0	=	A Committee of the Comm	1	1	1
	-	ı	0 .	1	1	1		1	0	1	1	1		1	1	1	1
1	1	_ 1	0	0	1	1		LI	0	0	1	1 _		1 1	1	1	7

.. R is transitive because Vivi, if (nij = 1) then (mij = 1)

	Assignment 2 (chapter 2)
5.	A= {1,2,3,4,5,6.7,8,9,10,11,12,13,143
	$R = \{(n,y): 3n-y = 0\}$
	3n-y=0
	3n=y R= { (1,3), (2,6), (3,9), (4,12) }
	The relation is irreflexive because $(1,1)$, $(2,2)$, $(3,3)$, $(4,4)$ $\notin R$.
	It is antisummetric because (1,3) ER but (3,1) &R
	It is not transitive because (1,3) and (3,9) # ER but (1,9) &R.
	·
6.	[0011] [1001]
	$R = \begin{bmatrix} 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} \qquad \begin{cases} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 1 & 1 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix}$
	[0001]
	a) RS = [0011] [1001]
	a) $RS = \begin{bmatrix} 0 & 0 & 1 & 1 \\ 1 & 1 & 0 & 0 \\ 0 & 0 & 1 & 1 \end{bmatrix} & \begin{bmatrix} 1 & 0 & 0 & 1 \\ 0 & 1 & 0 & 1 \\ 0 & 0 & 1 & 1 \end{bmatrix}$
	0001 [001,]
	= [0 1 1]
	0 0 1 1
	b) sx = [1001] [0011]
	0 1 0 8 0 0 1 1
	= [0 0 1]
	1 0 1
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	Relation is a relationship between the variables in and y such that for each value of it may be I or more values of y.
	Meanwhile function is a relationship between an independent variable n and
	an independent variable y such that for each I value of n there is I correspond
	·
	value of y.
8	i) The relations on set A 13 a function because each variable in have I variable y
	11) It is a function because
8	i) It is a function because f(2)=3, f(3)=4, f(4)=5 and f(5)=2.
	ii) H is a function because $f(2) = f(3) = f(6) = f(4) = 4$
	(11) It is not a function because (2,3) and (2,4) in R but 3 = 4 and
	domain of 52,59 is not equal to A.
	iv) It is not a function because $(2,3)$, $(2,2)$ in R but $3 \neq 2$ and $(4,4)$, $(4,4)$
	in R but 4 \$ 5.
9.	$R = \{(n,y) \mid y = n+5, m \in Z^t < 6 \}$
9.	$R = \{(n,y) \mid y = n+5, m \text{ is } 2^t < 6 3$
9.	u=n+5 ,n<6
9.	
9.	y = n+5, $n < 6$
9.	y = n+5, $n < 6$
9.	y = n+5, $n < 6$
9.	y = n+5, $n < 6$
9.	$y = n+5$, $n<6$ $R = \{1,2,3,4,5\}$ $R = \{(1,6),(2,4),(3,8),(4,9),(5,10)\}$ $\frac{f(0) = 0+5}{= 5}$ $Domain of K is \{1,2,3,4,5\}$ $f(1) = 1+5$ $kange of K is \{6,4,8,9,10\}$
9.	$y = n+5$, $n < 6$ $R = \{1,2,3,4,5\}$ $= \{1,2,3,4,5\}$ $R = \{(1,6),(2,4),(3,8),(4,4),(5,10)\}$ $= \{1,2,3,4,5\}$
9.	$y = n+5, n<6$ $y = \begin{cases} 1,2,3,4,5 \end{cases} \qquad R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $\frac{-6}{5} \qquad \text{Domain of } R \text{ is } \{1,2,3,4,5 \}$ $\text{Range of } R \text{ is } \{6,4,8,9,10 \}$ $= 6$ $f(2) = 2+5$
9.	y = n+5, $n < 6$
	$y = n+5$, $n < 6$ $q = \begin{cases} 1,2,3,4,5 \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $\frac{-6}{(2)} = 2+5$ $= 1$ $f(3) = 3+5$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,4), (3,4), (3,4), (3,4) \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,4$
	$y = n+5$, $n < 6$ $y = \begin{cases} 1,2,3,4,5 \end{cases}$ $R = \begin{cases} (1,6), (2,4), (3,8), (4,4), (5,10) \end{cases}$ $\frac{-6}{(2)} = 2+5$ $= 4$ $f(3) = 3+5$ $= 8$
	$y = n+5$, $n < 6$ $n = \{1, 2, 3, 4, 5\}$ $= \{(1, 6), (2, 4), (3, 8), (4, 9), (5, 10)\}$ $= \frac{1}{5}$ $=$
	$y = n+5$, $n < 6$ $y = 1, 2, 3, 4, 5$ $x = \{(1,6), (2,4), (3,8), (4,4), (5,10)\}$ $x = \{(1,6), (2,4), (3,8), (4,4), (4,4), (5,10)\}$ $x = \{(1,6), (2,4), (3,8), (4,4), (4,4), (4,4), (4,4), (4,4)$ $x = \{(1,6), (2,4), (3,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4)$ $x = \{(1,6), (2,4), (3,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4)$ $x = \{(1,6), (2,4), (2,4), (2,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4), (4,4)$ $x = \{(1,6), (2,4), (2,4), (2,4), (4,4$

	No:	Date:
* ***		
10.1)	Let x,=0 Let x2=1,	Let 15-1,
400 H 100	f(x) = 1 - 2x $f(x) = 1 - 2x$	f(x) = 1-2x
	f(0) = 1 - 2(0) $f(1) = 1 - 2(1)$	((-1) = 1 - 2(-1)
	= = -	= 3
	$f(x_1) \neq f(x_2) \neq f(x_3)$ where $x_1 \neq x_2 \neq x_3$	The first
<u> </u>	1(4) 1 ((2) 1 1 (43) W 2 (4 42) 43	WELELOLE LINE THE IS ONE-OA
	$f(x) \in R$. Therefore, $f(x)$ is onto R.	
and scarced	T(X) Ex. Ineregore, T(X) is onto A.	
	(La)=1=2	
	f(x)=1-2x is bijective because f(x) is	one-one and onto.
	Let x=1, f(x)=5x2-1 f(x)=5x2-1	
i		
	f(1) = 5(1) -1 f(-1) = 5(-1) -1	
	= 4 = 4	
	(1) (1)	
	$f(x_i) = f(x_2)$ where $x_i \neq x_2$. Therefore, f	$(x) = 5x^2 - 1$ is not one-one.
Section 1	f(x) ER. Therefore, f(x) is onto R.	
- 	C: \	
	f(x)=5x2-1 is not bijective because fl	d) is not one-one.
	Let x=1, Let x=-1,	
	$\frac{f(x) = x^4}{f(x) = x^4}$	* t 3
	f(1)=14 f(-1)=(-1)4	5
	= \ = \	2 P
	A. N. N. S	
	f(x,) = f(xz) where x, \$ x2. Therefore, f	(x)=x" is not one rone.
	f(n) ER. Therefore, f(x) is onto R.	
•		
	fla)=x" is not bijective because fla) is no	t one rone.

	No:	5	Date:	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
			<u>, , , , , , , , , , , , , , , , , , , </u>	
(0-4:::)	Let x, =1,	Let 12=0,	Let 1/3 = -1	<u> </u>
	f(x) = x-2	$\frac{f(x) = \frac{x-2}{x-3}}{x-3}$	$\frac{f(x)-\frac{x-2}{x-2}}{x-2}$	<u> </u>
~	1 1 1 1 2		χ	5
	f(1) = 1-2	$\frac{(0)-0-2}{0-3}$	f(-1) = -1.	- 2.
		0-3		- 3
	2	<u> </u>		
	2	, S	7	
			7:3	
	f(x,) of f(xs) where	e X, \$ X2. Therefore	$f(x) = \frac{x-2}{x-3}$ is one	r-one.
<u> </u>				<u> </u>
•	For f(n) = x-2			
		3 4	selet a ser per con s	
	x-3 \$0			
	x # 3			
·	Since x \$3, therefore	be flal is not onto	s R.	
				·
	$f(x) = \frac{x-2}{x-3} \text{ is not } 1$	sijective because	f(a) is not one-one	and not onto
11. in) f(x) = 3x -1			
····	9(1)=12-1			····
50.00	fg(a) = f(a2-1)			
	= 3(x 2-1)-			
	=3x2-3-1			
	= 3x2-4			
			2 11	2018 AUX 14
	Let x=0,	Let x=1.	Let x=2,	Let 1 = 3
N. 18 1707.2	fa(0) = 3(0) 2-4	fq(1)=3(1)2-4	fg(2)=3(2) -4	fq(3) = 3(3)2-4
	=-4	3 = -1	= 8	= 23
67 20 5000 000		12 10		

$f(x) = f(5x-6)$ $f(x) = f(5x-6)^{2}$ $= 25x^{2} - 30x - 30x + 36$ $= 25x^{2} - 60(x) + 36$ $= 36$ $= 36$ $= 1$ $\begin{cases} c_{1} = x = 0, & c_{1} = x = 1, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x) + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} - 60(x)^{2} + 36 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} + 1 & c_{1} = x = 3, \\ f(x) = 25(x)^{2} + 1 & c_{2} = x = 3, \\ f(x) = 25(x)^{2} + 1$				
$ \frac{f_{3}(x) = f_{3}(5x-6)}{f_{3}(x) = f_{3}(5x-6)^{2}} \\ = 25x^{2} - 30x - 30x + 36 $ $= 25x^{2} - 60x + 36 $ $= 36 $ $= 36 $ $= 1 $ $ \frac{f_{3}(0) = 25(0)^{2} - 60(0) + 36}{f_{3}(1) = 25(1)^{2} - 60(1) + 36} $ $= 36 $ $= 16 $ $= 81 $ $ xi) f_{3}(x) = x - 1 $ $= f_{3}(x) = f_{3}(x) + 1 - 1 $ $= x^{3}$ $= x^{3} + 1 - 1 $ $= x^{3}$ $= 16 $ $= x^{3}$ $= x^{3} + 1 - 1$ $= x^{3}$ $= 25x^{3} + 1 - 1$ $= x^{3}$ $= x^{3} + 1 - 1$ $= $				
$ \frac{f_{3}(x) = f_{3}(5x-6)}{f_{3}(x) = f_{3}(5x-6)^{2}} \\ = 25x^{2} - 30x - 30x + 36 $ $= 25x^{2} - 60x + 36 $ $= 36 $ $= 36 $ $= 1 $ $ \frac{f_{3}(0) = 25(0)^{2} - 60(0) + 36}{f_{3}(1) = 25(1)^{2} - 60(1) + 36} $ $= 36 $ $= 16 $ $= 81 $ $ xi) f_{3}(x) = x - 1 $ $= f_{3}(x) = f_{3}(x) + 1 - 1 $ $= x^{3}$ $= x^{3} + 1 - 1 $ $= x^{3}$ $= 16 $ $= x^{3}$ $= x^{3} + 1 - 1$ $= x^{3}$ $= 25x^{3} + 1 - 1$ $= x^{3}$ $= x^{3} + 1 - 1$ $= $		C, \ \ \		
$f_{3}(x) = f(5x-6)$ $= (5x-6)^{2}$ $= 25x^{2} - 20x - 30x + 36$ $= 25x^{2} - 60x + 36$ $= 36$ $= 36$ $= 1$ $\text{Let } x = 2, \qquad \text{Let } x = 3, \\ f_{3}(x) = 25(2)^{2} - 60(2) + 36, \qquad f_{3}(3) = 25(3)^{2} - 60(3) + 36, \\ = 16$ $xi) f(x) = x - 1, \qquad f_{3}(x) = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{5}$ $\text{Let } x = 0, \qquad \text{Let } x = 3, \qquad \text{Let } x = 3, \\ f_{3}(x) = f(x^{3} + 1) + 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1$	((· x)		5	r s x
$f_{g(x)} = f(5x-6)^{2}$ $= (5x-6)^{2}$ $= 25x^{2} - 20x - 30x + 36$ $= 25x^{3} - 60x + 36$ $= 36$ $= 36$ $= 1$ $let x = 2, let x = 3, f_{g(x)} = 25(2)^{2} - 60(2) + 36$ $= 16$		g(x)=5x-6	T TO ALVEST PARTY CONTROL TO A	* 2 P P
$= (5x-6)^{2}$ $= 25x^{2}-30x-30x+36$ $= 25x^{2}-60x+36$ $= 25x^{2}-60x+36$ $= 36$ $= 36$ $= 1$ $\begin{cases} $	16.			
$= 25x^{2} - 30x - 30x + 36$ $= 25x^{2} - 60x + 36$ $= 25x^{2} - 60x + 36$ $= 4x = 0, \qquad \text{Let } x = 1, \qquad \text{Let } x = 1, \qquad \text{Let } x = 3, \qquad $	18 Hz	fg(x) = f(5x-6)	***	
$= 25x^{2} - 60x \cdot 36$ $= 1$ $= 36$ $= 36$ $= 1$ $= 36$ $= 1$ $= 16$ $= 81$ $= 16$ $=$				
Let $x=0$, Let $x=1$, $fg(0) = 25(0)^{2} - 60(0) + 36$ $= 36$ $= 36$ $= 1$ Let $x=2$, $fg(2) = 25(2)^{2} - 60(2) + 36$ $= 16$ $= 81$ $xi) f(x) = x-1$ $g(x) = x^{2} + 1$ $= x^{3}$ Let $x=0$, Let $x=1$, Let $x=2$, Let $x=3$, $fg(0) = 0^{3} fg(1) = 1^{3} fg(2) = 2^{3} fg(3) = 3^{2}$ $= 0 = 1 = 8$ $xii) a_{n} = 6a_{n-1} - 9a_{n-2}; a_{n} = 1, q_{n} = 6$ $a_{n} = 6a_{n} - 9a_{n}$ $= 6(6) - 9(1)$		= 25 x 2 - 30 x - 30 x +	36	y 1
$fg(0) = 25(0)^{2} - 60(0) + 36$ $= 36$ $= 1$ $let $		=25x2-60x+36		
$fg(0) = 25(0)^{2} - 60(0) + 36$ $= 36$ $= 1$ $let $			1 1 1	
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$		[(A) = 25(A) = (A(A)+26		
Let $x=2$, $fg(2) = 25(2)^{2} - 60(2) + 36$ $= 16$ $= 81$ Xi) $f(x) = x - 1$ $g(x) = 2^{3} + 1$ $fg(x) = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{5}$ Let $x=0$, Let $x=1$, Let $x=2$, Let $x=3$, $fg(0) = 0^{3} \qquad fg(1) = 1^{3} \qquad fg(2) = 2^{3} \qquad fg(3) = 3^{3}$ $= 0 \qquad = 1 \qquad = 8 \qquad = 27$ $xii) a_{1} = 6a_{1} - 9a_{1} = 3 \qquad = 9a_{2} = 1$ $a_{2} = 6a_{1} - 9a_{0} \qquad = 6(6) - 9(1)$	·	1 9		
$f_{3(2)} = 25(2)^{2} - 60(2) + 36$ $= 16$ $= 81$ $xi) f(x) = x - 1$ $g(x) = 2^{3} + 1$ $f_{3(x)} = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{5}$ $let x = 0, let x = 1, let x = 2, let x = 3, f_{3(0)} = 0^{3} f_{3(1)} = 1^{3} f_{3(2)} = 2^{3} f_{3(3)} = 3^{3}$ $= 0 = 1 = 8$ $= 27$ $xii) a_{n} = 6a_{n-1} - a_{n-2}; a_{0} = 1, q_{1} = 6$ $a_{1} = 6a_{1} - a_{2}$ $= 6(6) - 9(1)$		- 36	- 1 .	
$f_{3(2)} = 25(2)^{2} - 60(2) + 36$ $= 16$ $= 81$ $xi) f(x) = x - 1$ $g(x) = 2^{3} + 1$ $f_{3(x)} = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{5}$ $let x = 0, let x = 1, let x = 2, let x = 3, f_{3(0)} = 0^{3} f_{3(1)} = 1^{3} f_{3(2)} = 2^{3} f_{3(3)} = 3^{3}$ $= 0 = 1 = 8$ $= 27$ $xii) a_{n} = 6a_{n-1} - a_{n-2}; a_{0} = 1, q_{1} = 6$ $a_{1} = 6a_{1} - a_{2}$ $= 6(6) - 9(1)$		Let x= 2.	Let x=3	
$xi) \ f(x) = x-1$ $g(x) = f(x^3+1)$ $= x^3+1-1$ $= x^3$ $let x = 0, let x = 1, let x = 2, let x = 3, fg(0) = 0^3 fg(1) = 1^3 fg(2) = 2^3 fg(3) = 3^3$ $= 0 = 1 = 8 = 27$ $xii) a_n = 6a_{n-1} - 9a_{n-2}; a_0 = 1, a_1 = 6$ $a_2 = 6a_1 - 9a_0$ $= 6(6) - 9(1)$	3	8	fa(3) = 25(3))2-60(3)+36
$q(x) = 2^{3} + 1$ $f_{q}(x) = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{3}$ $let x = 0, let x = 1, let x = 2, let x = 3,$ $f_{q}(0) = 0^{3} f_{q}(1) = 1^{3} f_{q}(2) = 2^{3} f_{q}(3) = 3^{3}$ $= 0 = 1 = 8 = 27$ $x_{11}(x) = 2^{3} f_{q}(x) = 2^{3} f_{q}(x) = 3^{3} = 2$ $= 0 = 1, q_{1} = 6$ $q_{2} = 6q_{1} - q_{2}$ $= 6(6) - q(1)$				
$q(x) = 2^{3} + 1$ $f_{q}(x) = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{3}$ $let x = 0, let x = 1, let x = 2, let x = 3,$ $f_{q}(0) = 0^{3} f_{q}(1) = 1^{3} f_{q}(2) = 2^{3} f_{q}(3) = 3^{3}$ $= 0 = 1 = 8 = 27$ $x_{11}(x) = 2^{3} f_{q}(x) = 2^{3} f_{q}(x) = 3^{3} = 2$ $= 0 = 1, q_{1} = 6$ $q_{2} = 6q_{1} - q_{2}$ $= 6(6) - q(1)$	\$			- 13-10-
$q(x) = 2^{3} + 1$ $f_{q}(x) = f(x^{3} + 1)$ $= x^{3} + 1 - 1$ $= x^{3}$ $let x = 0, let x = 1, let x = 2, let x = 3,$ $f_{q}(0) = 0^{3} f_{q}(1) = 1^{3} f_{q}(2) = 2^{3} f_{q}(3) = 3^{3}$ $= 0 = 1 = 8 = 27$ $x_{11}(x) = 2^{3} f_{q}(x) = 2^{3} f_{q}(x) = 3^{3} = 2$ $= 0 = 1, q_{1} = 6$ $q_{2} = 6q_{1} - q_{2}$ $= 6(6) - q(1)$	xi)	f(x) = x - 1		* ************************************
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$= x^{3} + 1 - 1$ $= x^{3}$ Let $x = 0$, Let $x = 1$, Let $x = 3$, $fg(0) = 0^{3} \qquad fg(1) = 1^{3} \qquad fg(2) = 2^{3} \qquad fg(3) = 3^{3}$ $= 0 \qquad = 1 \qquad = 8 \qquad = 27$ $x_{11} = 0 \qquad = 0$ $q_{1} = 6q_{1} - q_{1}$ $q_{2} = 6q_{1} - q_{2}$ $= 6(6) - q(1)$		J		
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$= x^{3}$ Let $x=0$, Let $x=1$, Let $x=3$, $fg(0)=0^{3} fg(1)=1^{3} fg(2)=2^{3} fg(3)=3^{3}$ $= 0 = 1 = 8 = 27$ $. xii) a_{1} = 6a_{1} - 9a_{1} = 2$; $a_{0}=1$, $a_{1}=6$ $a_{2}=6a_{1}-9a_{0}$ $= 6(6)-9(1)$	*	= x ³ +1-1		20
$f_{g(0)} = 0^{3} \qquad f_{g(1)} = 1^{3} \qquad f_{g(2)} = 2^{3} \qquad f_{g(3)} = 3^{3}$ $= 0 \qquad = 1 \qquad = 8 \qquad = 27$ $(xii) a_{n} = 6a_{n-1} - 9a_{n-2}; a_{0} = 1, a_{1} = 6$ $a_{2} = 6a_{1} - 9a_{0}$ $= 6(6) - 9(1)$			1. 10. 10.	
$f_{g(0)} = 0^{3} \qquad f_{g(1)} = 1^{3} \qquad f_{g(2)} = 2^{3} \qquad f_{g(3)} = 3^{3}$ $= 0 \qquad = 1 \qquad = 8 \qquad = 27$ $(xii) a_{n} = 6a_{n-1} - 9a_{n-2}; a_{0} = 1, a_{1} = 6$ $a_{2} = 6a_{1} - 9a_{0}$ $= 6(6) - 9(1)$		1-1 7-0		N 1 2 2
= 0 = 1 = 8 = 27 $= (3) = 0$ $= (4) = 0$ $= (4) = 0$ $= (4) = 0$ $= (4) = 0$ $= (4) = 0$ $= (4) = 0$ $= (6) = (1)$		V. V	(ex x=5)	[12] = 33
$\begin{array}{c} (-x)(1) & a_{n} = 6a_{n-1} - 9a_{n-2} ; a_{0} = 1, \ a_{1} = 6 \\ \\ (-2) & a_{2} = 6a_{1} - 9a_{0} \\ \\ (-3) & a_{2} = 6(6) - 9(1) \end{array}$	Ε			9
$\begin{array}{c} (-x)(1) = 6a_{n-1} - 9a_{n-2}; a_0 = 1, \ a_1 = 6 \\ a_2 = 6a_1 - 9a_0 \\ = 6(6) - 9(1) \end{array}$	· 		<u>- </u>	= 21
9 ₂ = 6a ₁ - 9a ₀ = 6(6) - 9(1)			1006	
=6(6)-9(1)			-1, 4, = 6	
7.2 E		AND THE RESIDENCE OF THE PARTY	Jan Company of the Co	E

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	No: Date:
	a3 = 6a3-9a,
	a3=6(37)-9(6)
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	a ₃ = 108
8	au = 6a3 - 9a2
	= 6(108) - 9(27)
	= 405
	First few sequences of an = 6an-1-9an-2 are 1,6,27,108, 405, 1458,
 	First tem sequences of an = ban-1 - 1an-2 are 1,6, 11, 108, 703, 1758,
10 · xi//	an = 6an-1 - 11an-2 + 6an-3; a0 = 2, a1 = 5, a2 = 15
	93 = 69, -11a, +6a,
	=6(15)-11(5)+6(2)
	= 47
S CONTROL OF THE STATE OF THE S	a4 = 6a3 - 11a3 + 6a,
3	=6(47)-11(15)+6(5)
	= 147
	95 = 694-1193+693
	=6(147)-11(47)+6(15)
	= 455
	First few sequences of an = 6an -1 - 11an - 2 + 6an - 3 are 2,5,15, 47,147,455,
(טוֹצ	$a_n = -3a_{n-1} - 3a_{n-2} + a_{n-3}$; $a_0 = 1, a_1 = -2, a_2 = -1$
	93 = -305 - 30, 400
	=-3(-1)-3(-2)+1
W 4 4 4	= 10
and a set se	

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	No:	Date:
2000 (6 57)		n y
·*		
	9+=-393-39,+0,	
·· ·	=-3(10)-3(-1)+(-2)	
- 1 mg	= -29	Provincial Control of the Control of
23		
	95=-394-398+92	
	=-3(-29)-3(10)+(-1)	
**************************************	= 56	
, 	The first few sequences of an = - 3an - 1 - 3an - 2	1 +an-3 are 1,-2,-1,10,-20
<u> 13 : i</u>	19,=6	
	a ₂ = 5a ₁ - 3	
	=5k-3	
91		
	93=593-3	7 7
	= 5(51-3)-3	
	= 251 - 15-3	
	= 256-18	7
8 8	100 Aug	
· · · · · · · · · · · · · · · · · · ·	a, = 5a ₃ - 3	
	=5(251-18)-3	
	= 1254-90-3	
	=1251-93	
)i)) a ₄ = 7	
***	125k-93=7	
	125k=100	
	100	10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -
	125	
	4 5 5	N SOMEONE N
60°	5	