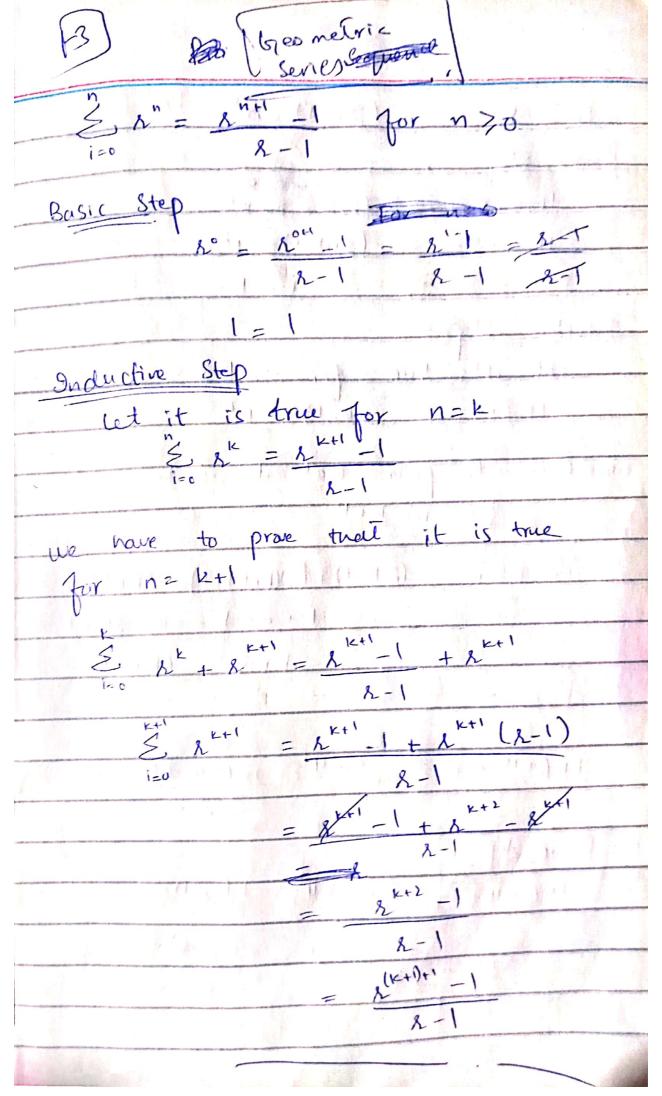
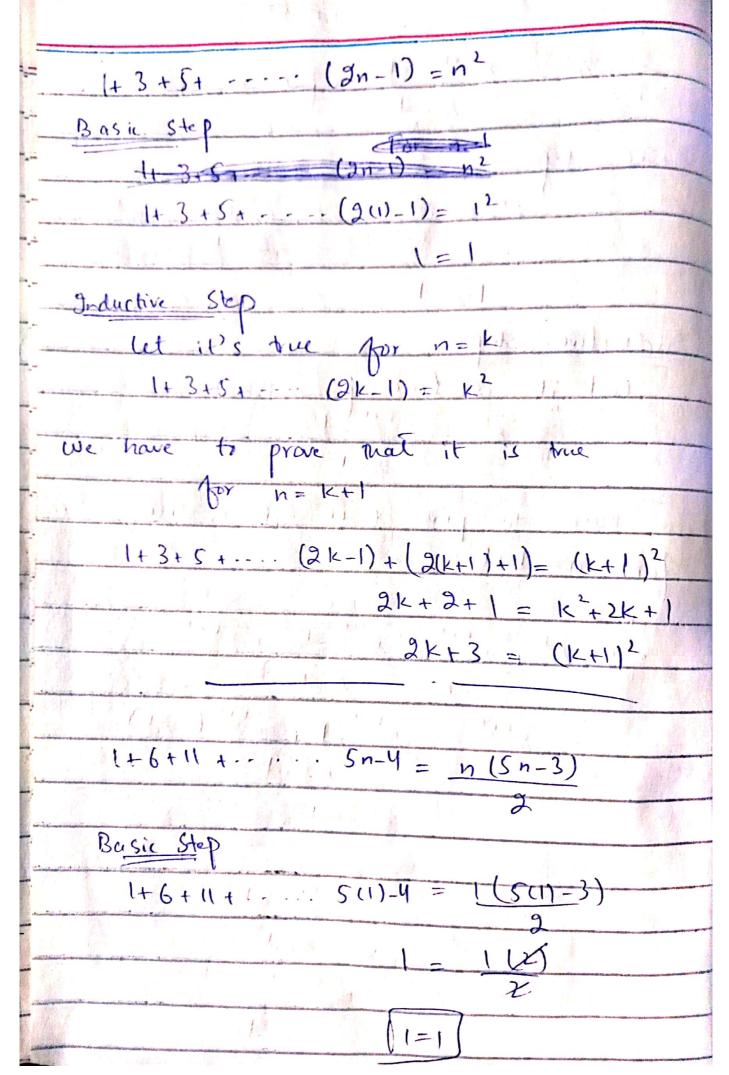
[-2]		
Mathematical Inductions	tion.	
A proof of Mathematical Indus		
$1+2+3+\cdots+n = n(n+1)$		
	(K+1)(K+1+1)	
Basic Step		
For $n=1$	(12+1) (K+2)	
1+2+3+ 1 = 1(1+1)		
1+2+3.		
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
1+2+3+		
	M. Santa	
Inductive Step		
let it is true for n=k		
1+2+3+ K= K(K+1)		
We have to prove that it is	true	
We have to provide	1515	
for n=k+1. So add k+1 on		
1+2+3+ K+(K+1) = K(K+1)+(K	+1)	
1+2+3+ K+(K+1) = K+K+2K+		
= k(k+1) + 2(k+1)		
= (K+1)(K+2)		
2 (KT) (KT)		
= (K+1)(R+1)+1)		





Inductive Step brue for n= K 1+6+11+1-= -1 - 15'k-4= KI(512-3) For n=k+1 1+6+11+ --5K-4+ (S(K+1)-4)=1x(SK-3)+(S(K+1) 5k+1= 5k2-3k+2(5k+1) 5k+1= 5k2-3k+ 10k+2 SK+11 = 5k2+7K+2 = (K+1)(5(K+1)-3) SIR+1= SK2+SK+2K+2 = (1c+1)(5k+5-3) SK+11 = SK(K+1) +2(K+1) = (le+1) (SK+2) 2K+1 = (K+1)(UK+5) 5k+1= (k+1) (5k+5-2) 5KH= (KH) (5(KH)-3)

18 3r

18 = L

8=3h

P(n)= 22n -1 is divisible by 3
Basic Step

P(0) = 2°-1

= 1-1

= 0 = 0/3 = 0

Inductive Step

Let: p(k) = 924 1 is also divisible by 3

we have to prove most p(12+1) is also divisible by 3

p(K+1)= 2(K+1)

P(K+1) = 22K+2

= 92k, g2-1

= 2 K Y - 1

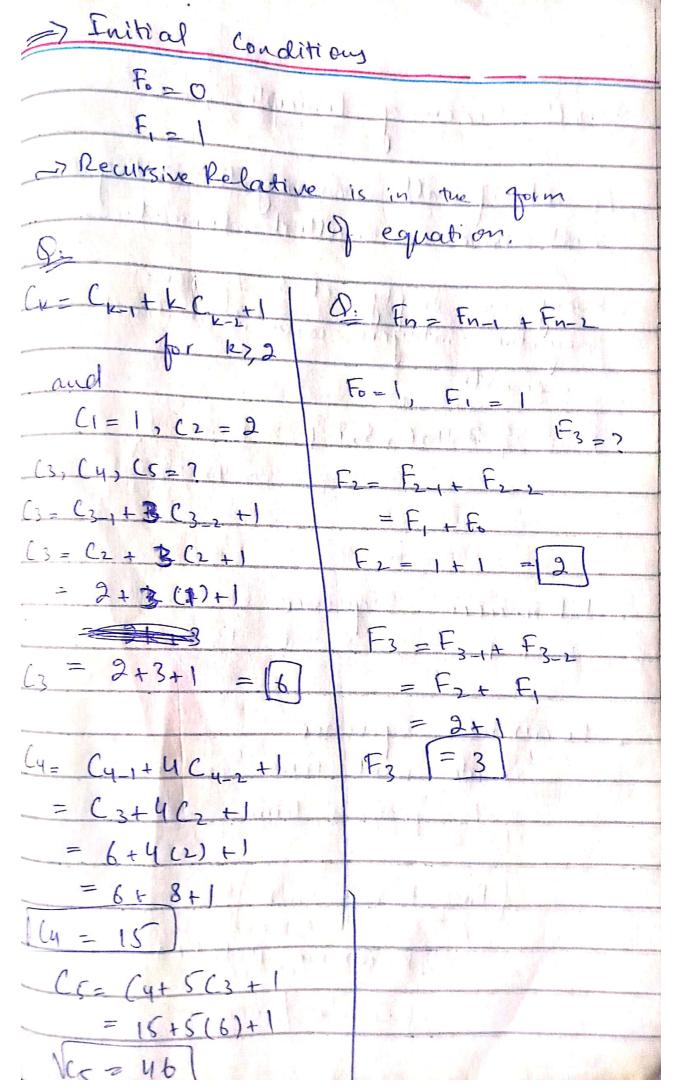
= 9 X(3+1)-1

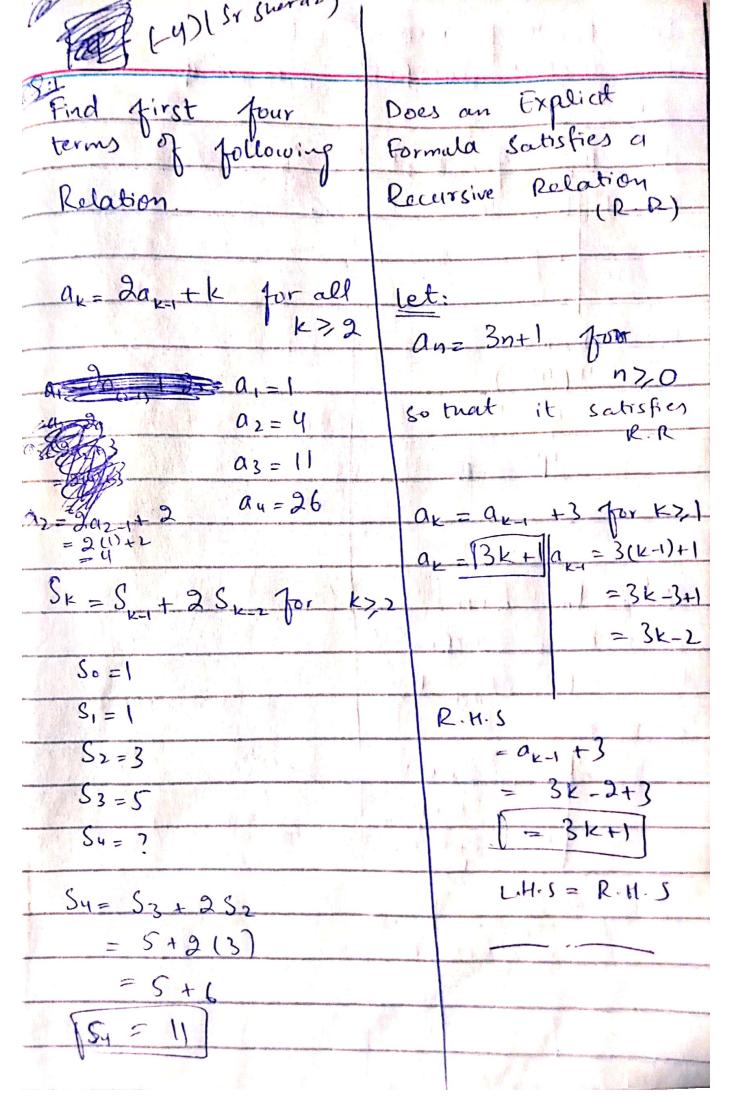
3. 22k 1 2 k

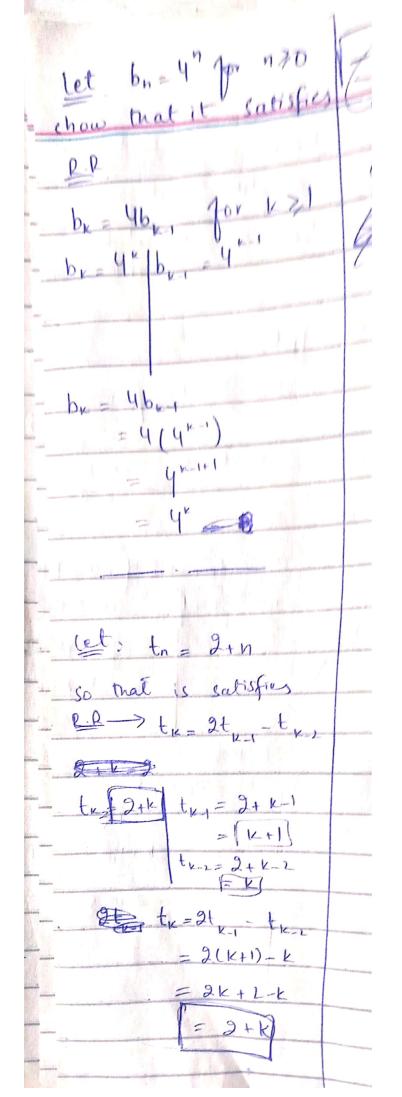
= 3.9" + 31

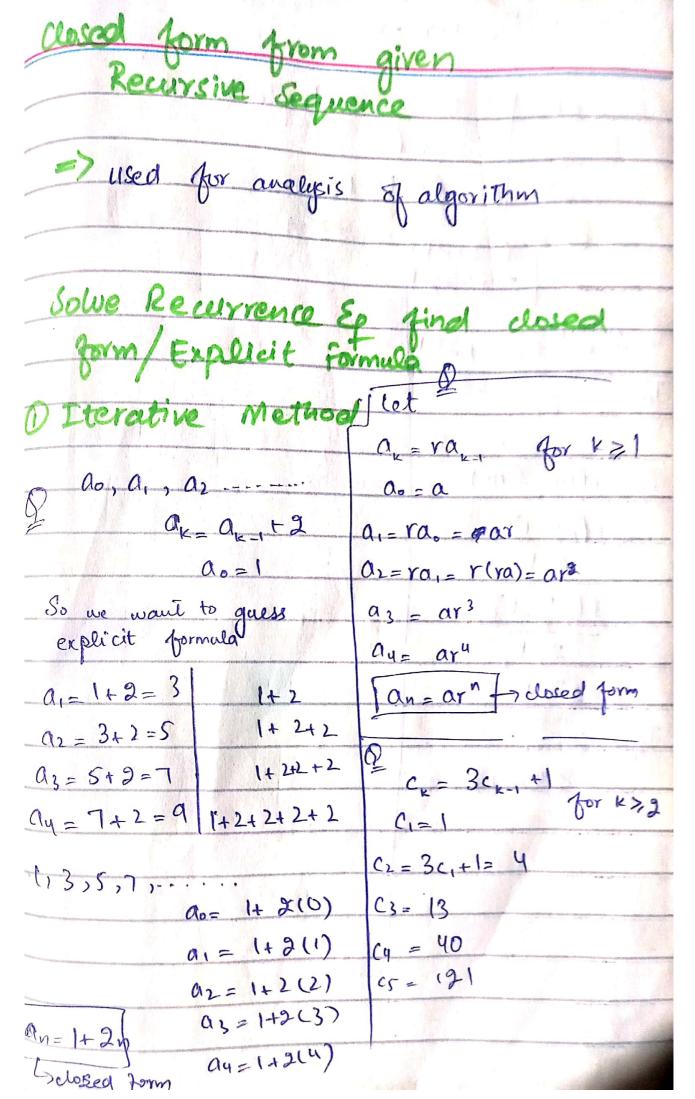
= 3(9 + 1)

Juell Ordering Principle . A set of all non-negative integers must have a smallest element. regative intégers contains à least element. S= 4 2,4,6,5,8 3-> form) mother a lical induction. Fibomacci Sequence Recursive Sequence quite next term in term of previous term Fn = Fn-1 + Fn-2 > Recursive Relation · Recursion Recursive









1,4,13,40,121,		
	d, =?	
	desa	
$C_2 = 3+1$ $C_3 = 3(3+1) + 3^2 + 3 + 1$	d. = 170	170
$C_3 = 3(3^1 + 3 + 1)$	di= 170+2=172	170+9
$53^{3} + 3^{2} + 3 + 1 = 40$	dz=172+2=174	170+2+2
7343177	d3= 11176	170+2+241
$C_{n} = 3^{n-1} + 3^{n-2} + \cdots + 3 + 1$	dy= 178	170+242+24
$C_n = S + S + S$	dn= 170 +	2(1)
× 3 <sup>i</sup>	d30= 170+2130)	
1=0	$d_{30} = 170 + 60$	
$J_n = \alpha(r'-1)$	$d_{30} = 230$	
1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -		
$=1(3^n-1)$	Q A runner targets nimely	
3-1	to improve on a course	
$=\frac{3-1}{2}$ $\Rightarrow$ closed	3 seconds a day. On dayo, he runs couse (track) in 3 min.	
1 John	How fast will he run on	
	day 14.	
-2	3 min = 3 x 60 sec	
A worker is promised		180
productivity by 2 units	di= 180=3=193	180 #3 F3
Antiquities and a second and a	dz = 174	1805336
doys. If his productivity	dz= 199	
	dn= 18033(n)	
is the productivity on	Committee of the commit	
A STATE OF THE PROPERTY OF THE	diy= 180 = 3(14)	
day 30.	= 130	

Tower The 2TK-1-Tiel T3=7 = 2 (2+1)+1 Tu= 13 [22+2+1)+1 Th=2n-1 2n-1 +2+1 Tn= 532 Geometric Series = a (1 -1) 1 -) all o  $=1(2^n-1)$ = 2<sup>n</sup>-1 = 1.844 x 1019 sec