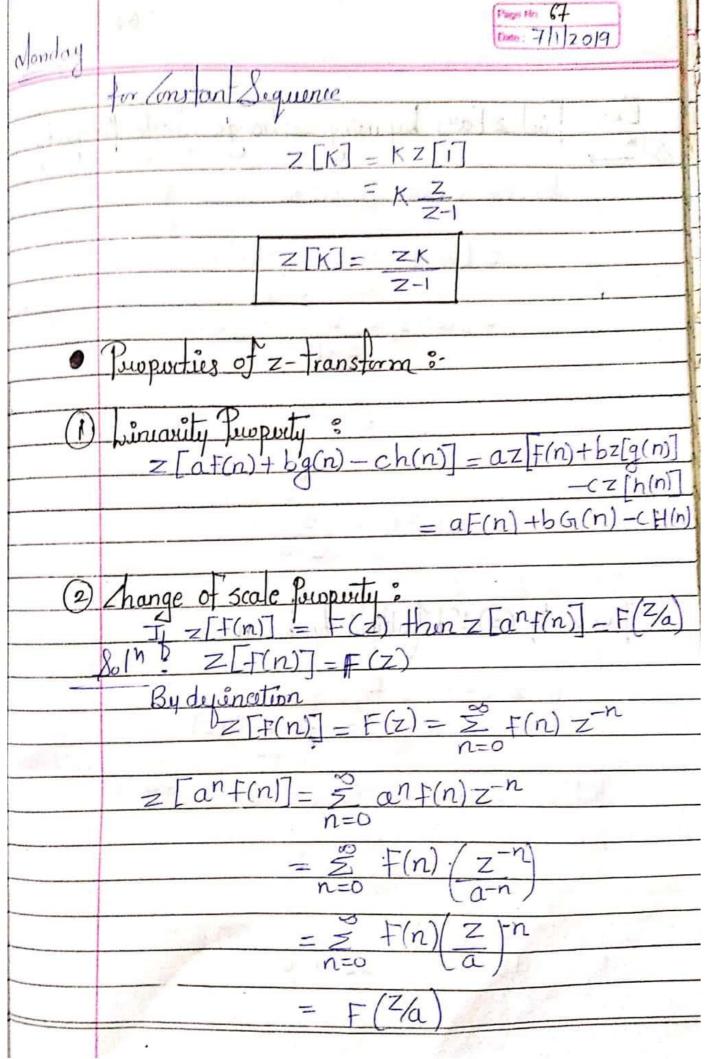
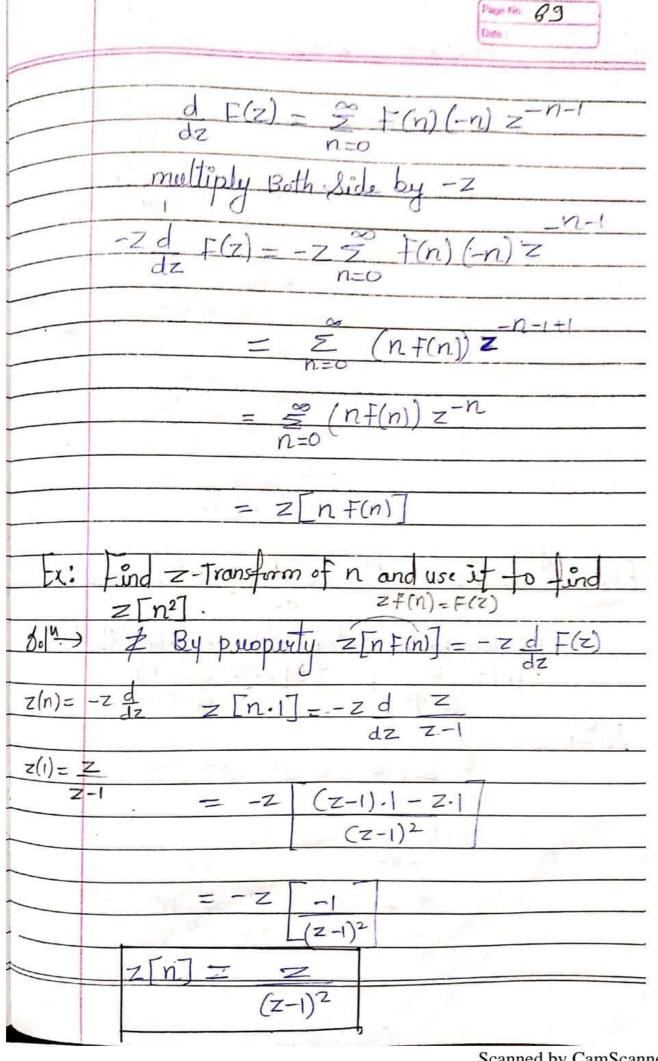
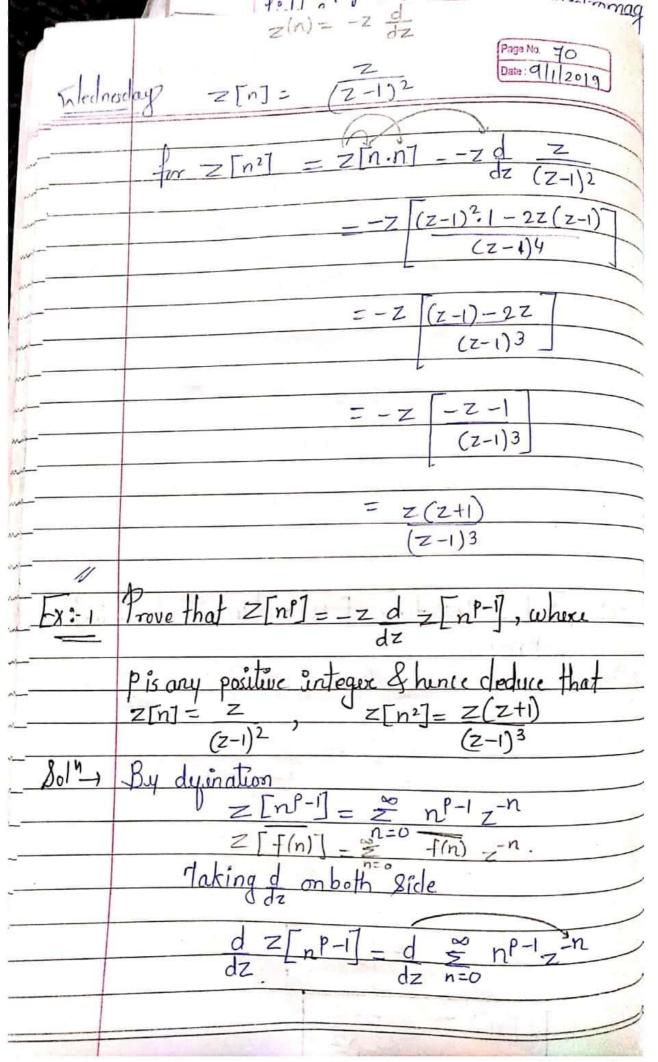
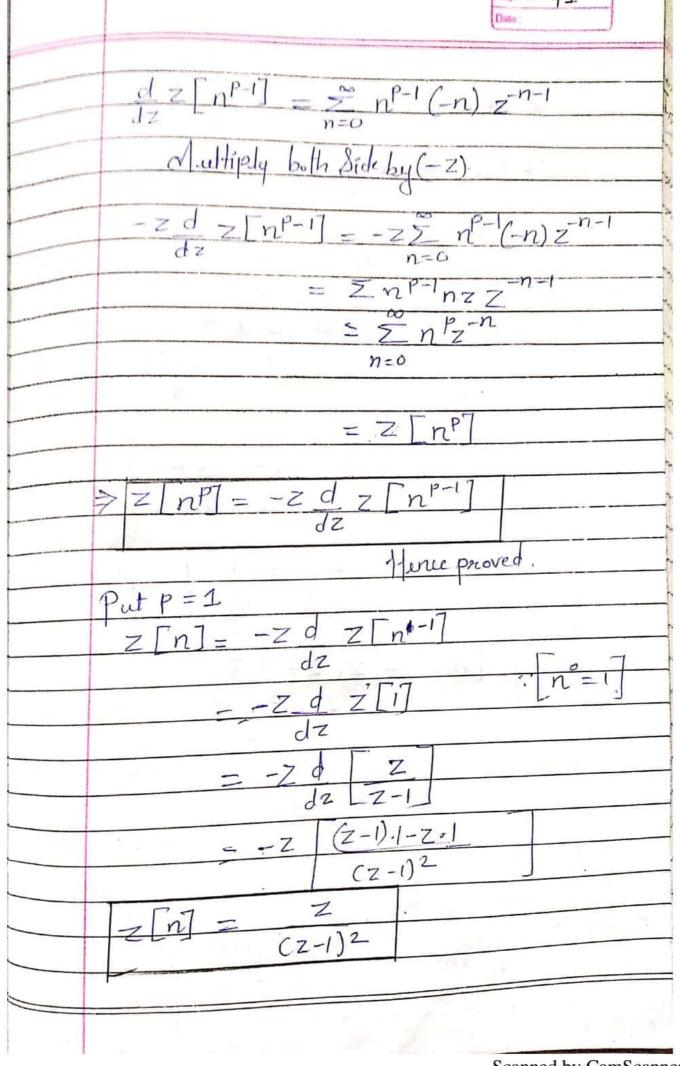
	Date: 4 1 2019
- Friday	Unit-II Z-TRANSFORM Date: 411/2019
\ # 	- Urgi
- ~~	e z-transform à
_ ,,,,,	Di I I'm or For be a Sequence
	Defination - Jet T(11)
No.	Defination: Jet f(n) or Fn be a Sequence Then z-transform of t(n) is given by
- ANA	$Z[f(n)] = \sum_{n=0}^{\infty} f(n) Z^{-n}, n \neq 0$
live	Z[f(n)] = Z + (n)Z
امده	I do do to
	Chore z on LHS is an Operator and
	1 on RHS is Complex number.
Ex:	Find z-Transform of unity and hunu find Lons z transform of Lonstant Sequence k. By defination
	- loss z transform of Longtant sequence k.
Sol M-	Bu duination
Mi 201 -7	$Z[f(n)] = \sum_{n=0}^{\infty} f(n) z^{-n}$
10.00	n=0
West_	$Z[I] = \sum_{n=0}^{\infty} 1 Z^{-n}$
that	n=0
w	- 51
Men.	$=$ $\sum_{n=1}^{\infty}$
None	z°=1 + 1 + 1 +
U.s.	$ z^{2} $ $=\frac{1}{z_{0}^{2}}+\frac{1}{z_{1}^{2}}+\frac{1}{z_{2}^{2}}+\cdots$
Views	/ 1)-1
Not	$= \left(1 - \frac{1}{2}\right)^{-1}$
Cont.	\ 21
<u> </u>	= 1 = 1
w	$1-\frac{1}{2}$ $\frac{z-1}{2}$
~.	2[1] 2
n	- Z-1
4	
-	



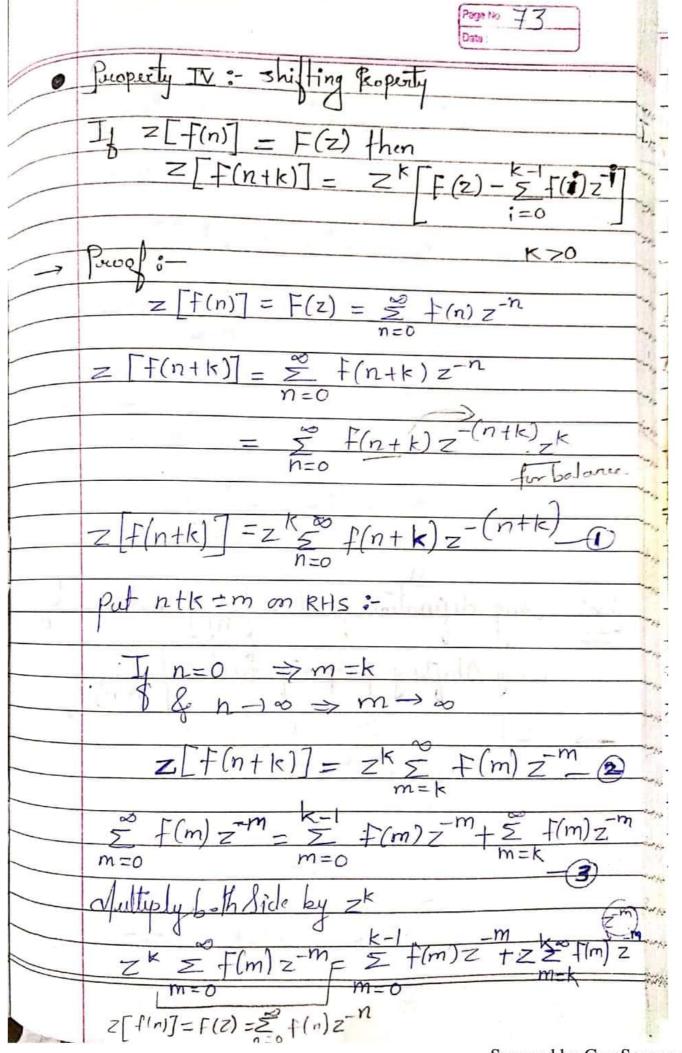
Page No. 68 Date:
Ex. find $z[a^n]$ by using thange S cale furpury $S = \sum_{n=1}^{\infty} \frac{1}{n} $ By thange S cale P an P and P
$= \frac{z}{a}$
Purporty 3: Tultiplicity by n:
$ \frac{\int_{-\infty}^{\infty} z \left[f(n)\right] = f(z) + hon}{z \left[nf(n)\right] = -z d f(z)} $
$50^{1} = Z[f(n)] = F(z) = \frac{20}{5} f(n)z^{-n}$ $F(z) = \frac{2}{5} f(n)z^{-n}$ $h=0$
$\frac{d}{dz} F(z) = d \approx F(n) \sqrt{-n}$ $\frac{d}{dz} n = 0$

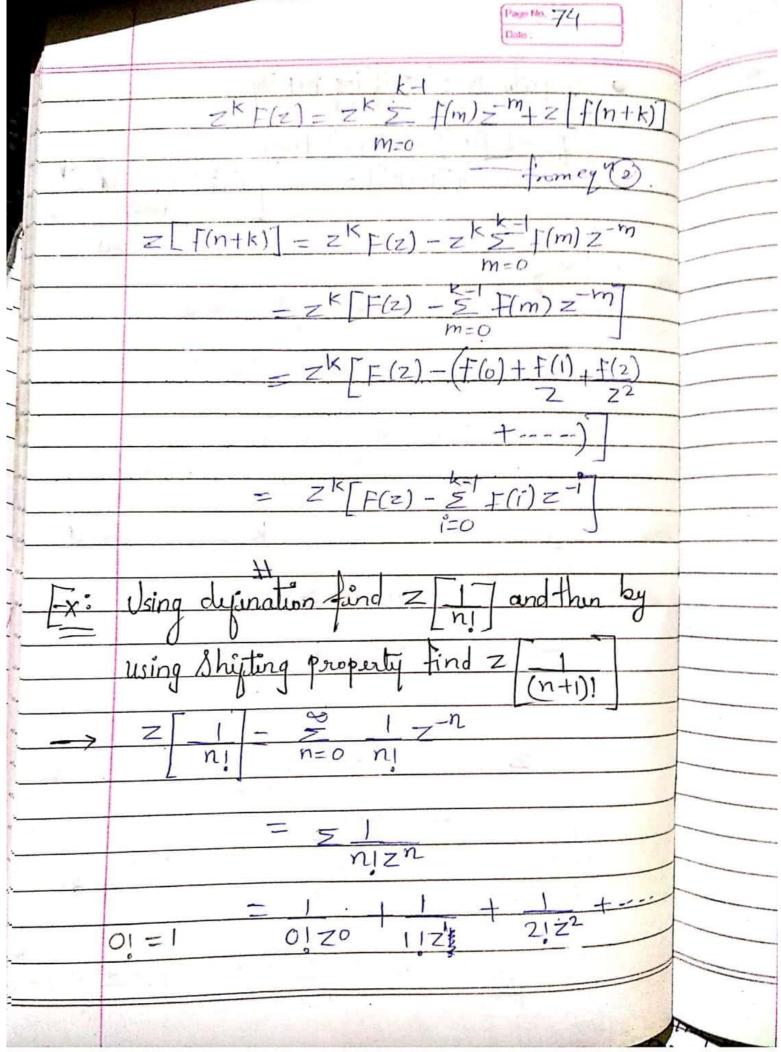


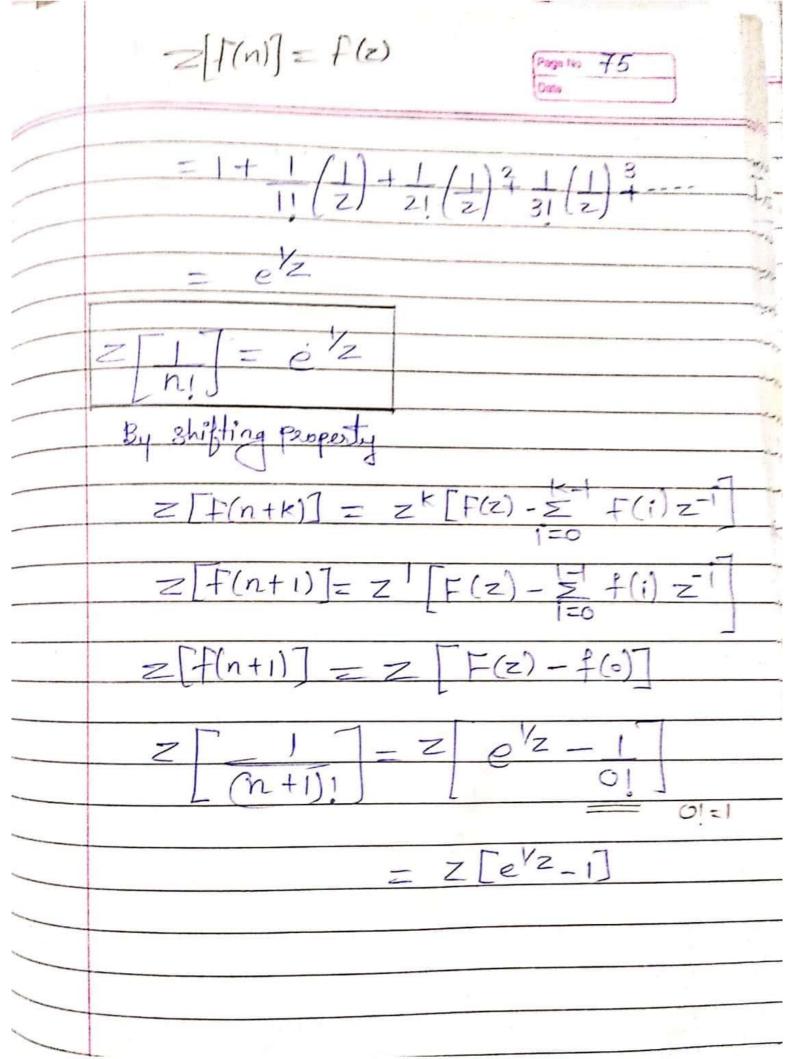


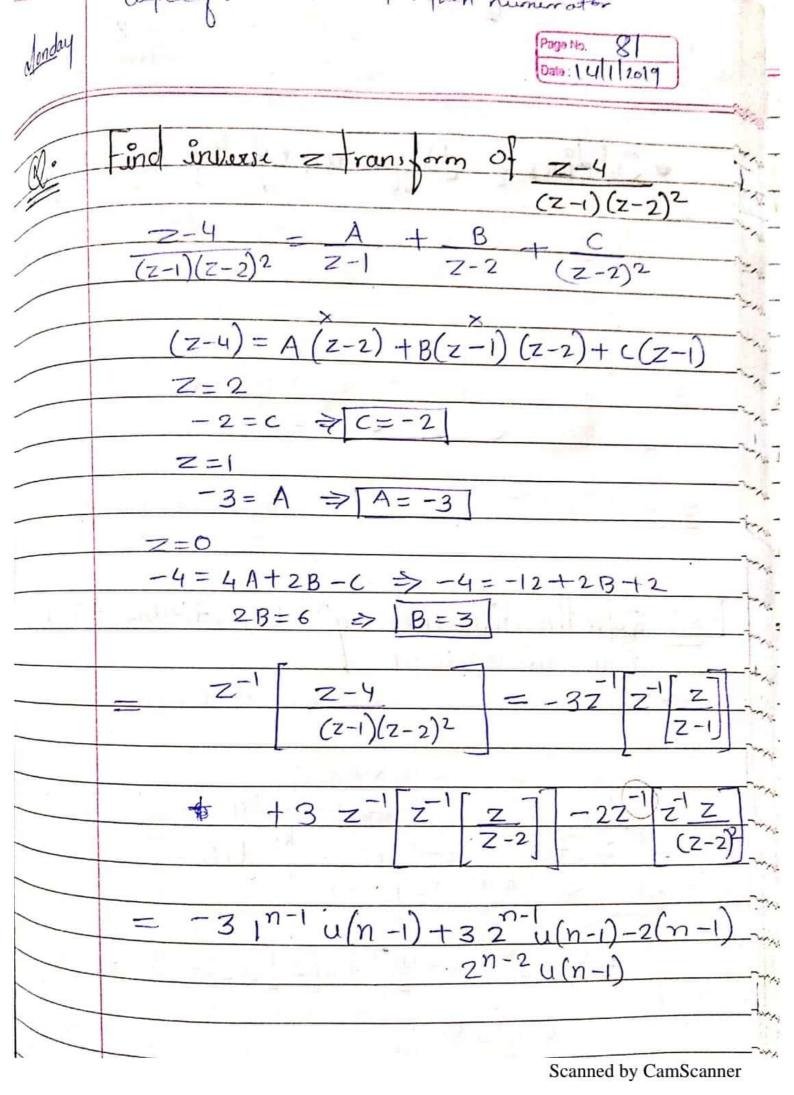


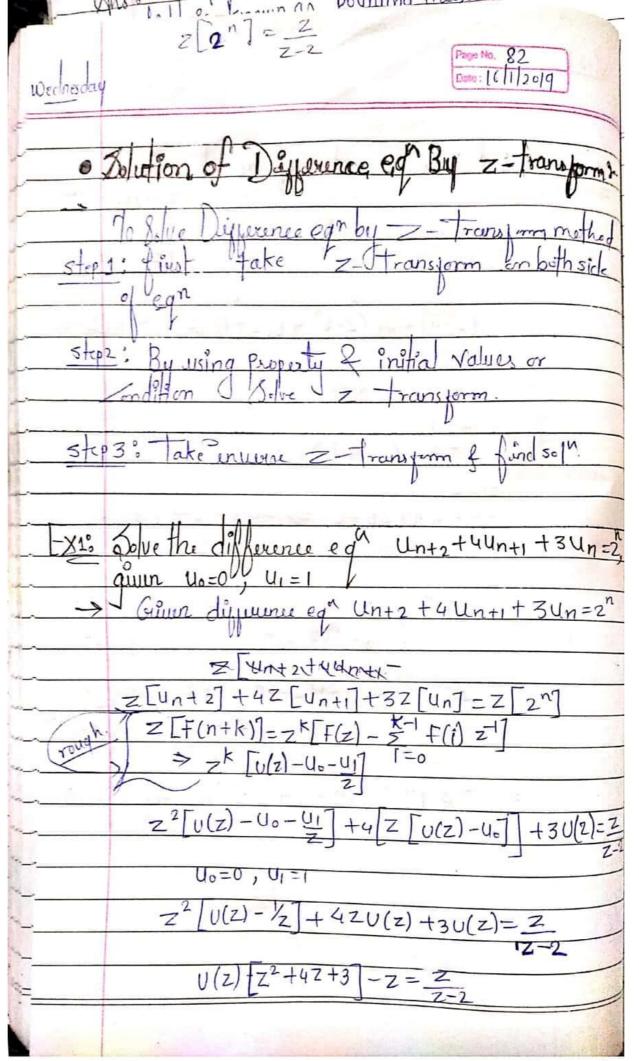
= - Zd Z[nz-1] zd z dz (z-1)2



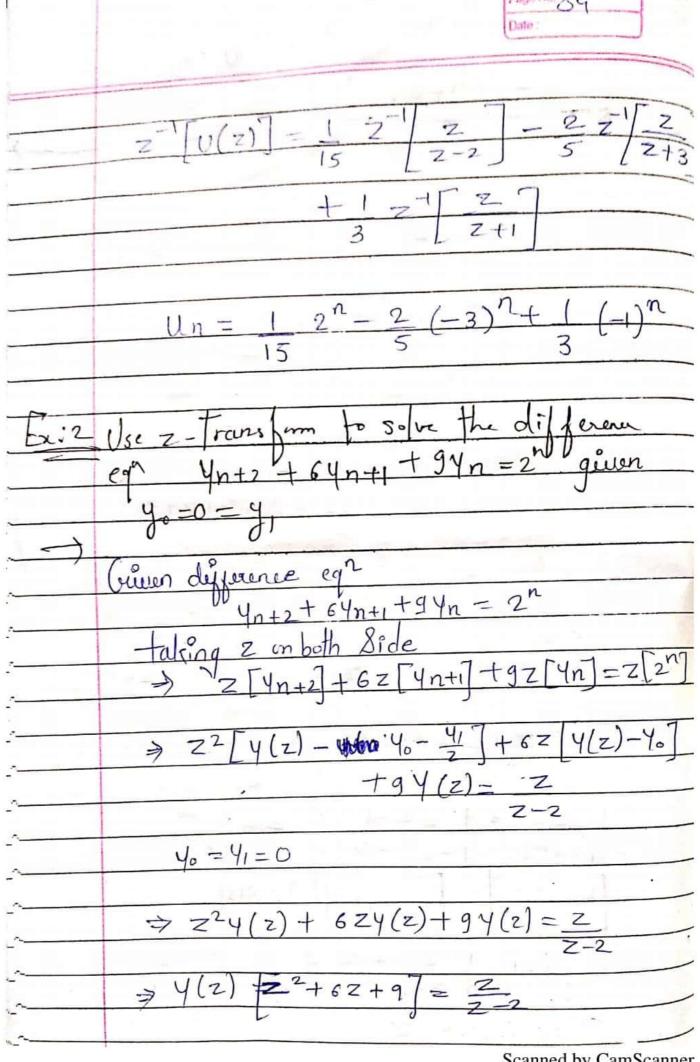


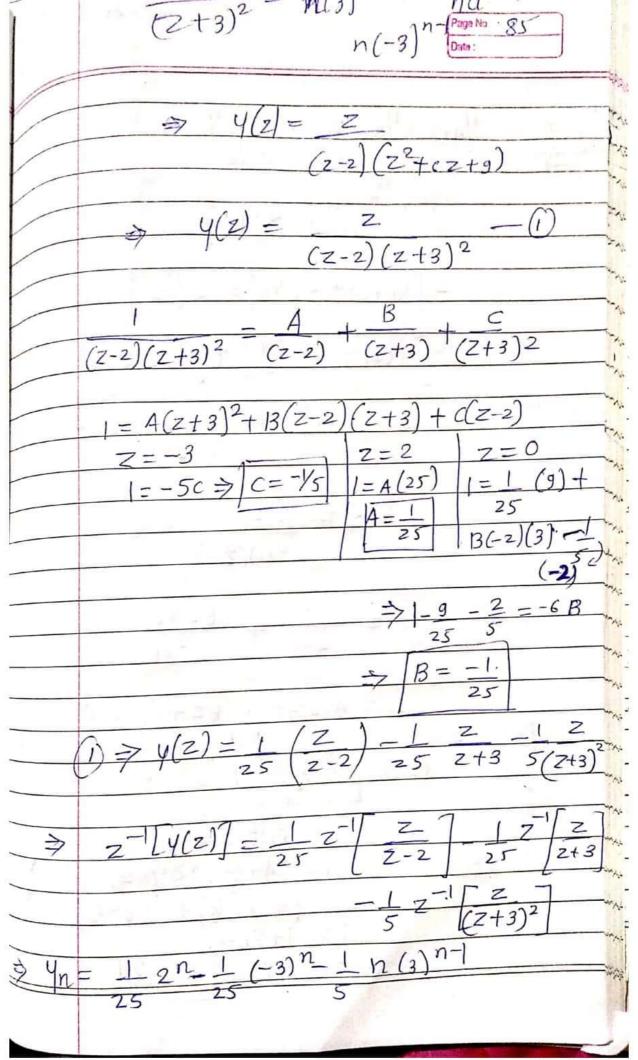


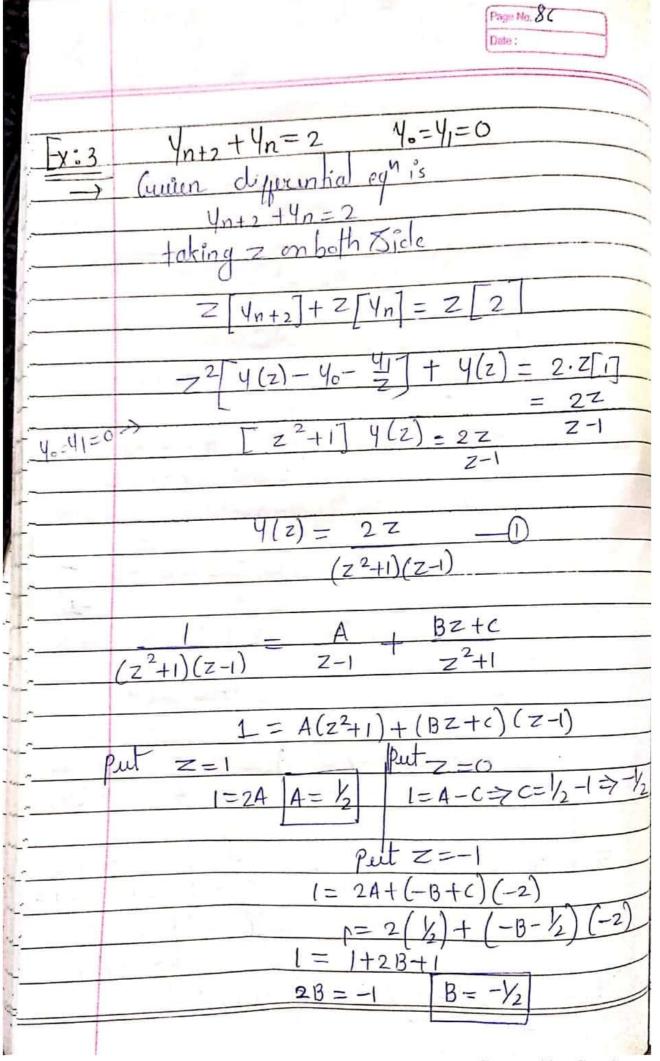


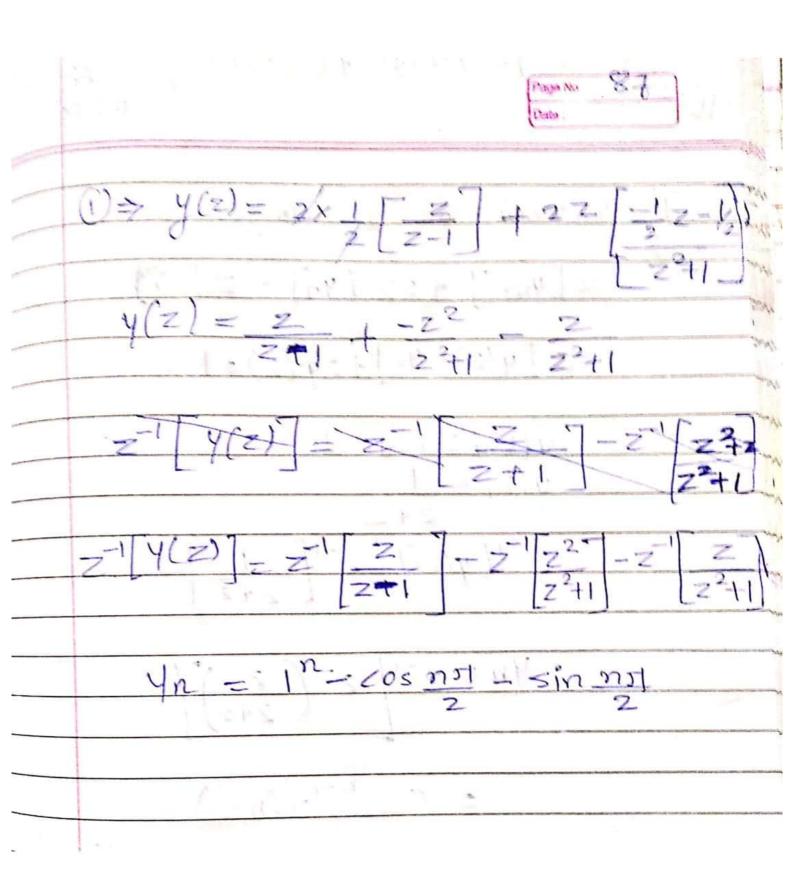


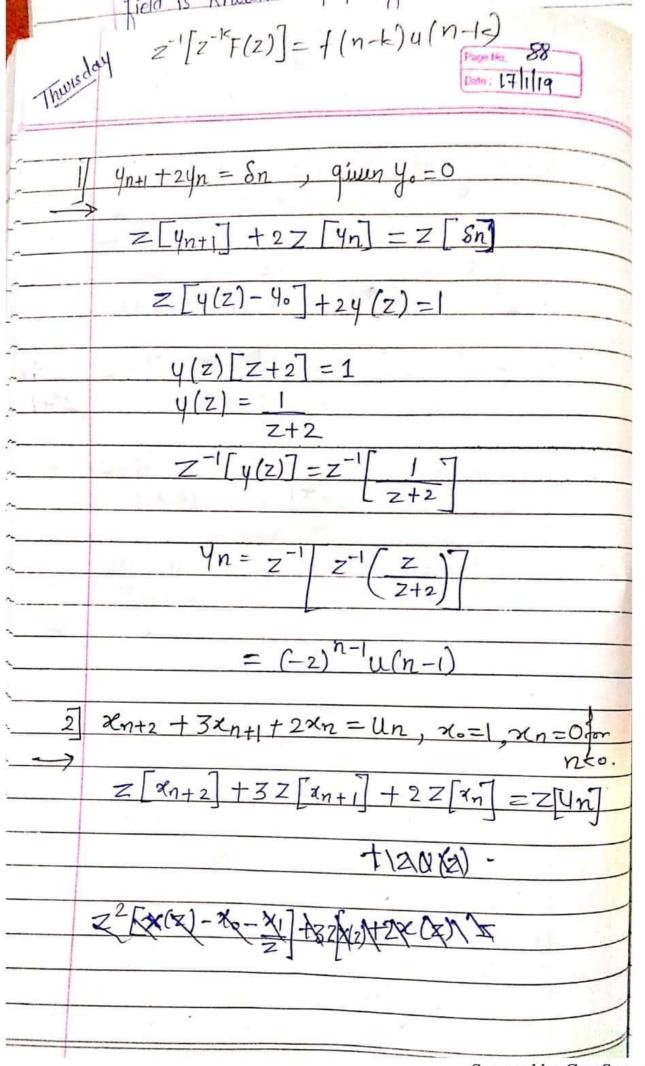
U182 = X
U182 = 12
$U(2)(z^2+4z+3) = \frac{z}{z-2}+z$
Z-2
 - Z+Z2-2Z
 Z-2
 $U(z) = z^{2} = z^{2}$ $(z-2)(z^{2}+4z+3)$
$(z-2)(z^2+4z+3)$
= z(z-1) - (1) $(z-2)(z+3)(z+1)$
(z-2)(z+3)(z+1)
A + B + C
 $z-1$ $\Rightarrow A + B + C$ (z-2)(z+3)(z+1) $z-2$ $z+3$ $z+1$
(2-2)(2+3)(2+1)
1 1 1 1 1 1 1 1 1 1
Z-1 = A(z+3)(z+1) + B(z-2)(z+1) +
C(z-2)(z+3)
Z=-3 Z=-1 Z=2
-4 = 10B $-2 = -6C$ $1 = 15A$
9 1 1 1 1 1 1
$B = -2$ $C = \frac{1}{3}$ $A = \frac{1}{15}$
U(z) = 1 Z -2 Z + 1 Z 15 $z-2$ 5 $z+3$ 3 $z+1$
15 Z-2 5 Z+3 3 Z+1
Take inverse Z transform on both side.
Scanned by CamScanner

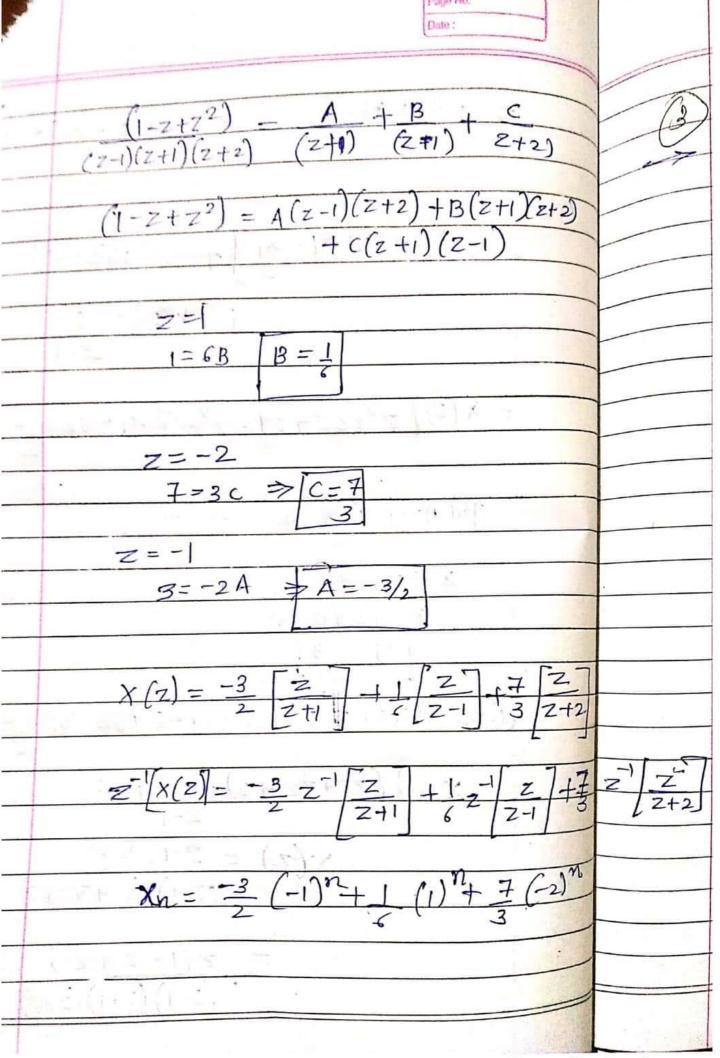






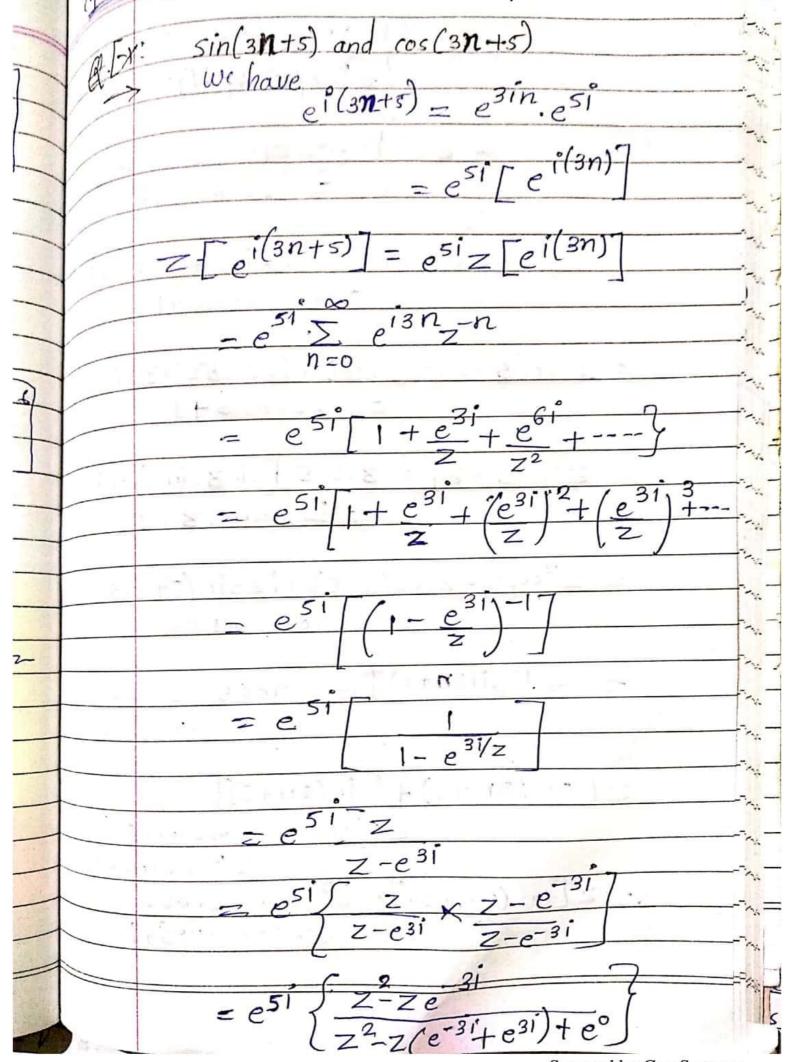






Date :	-

	Date :
(3)	$\alpha_{n+2} - 3\alpha_{n+1} + 2\alpha_n = 4^n, \alpha_{o} = 0, \alpha_{i} = 1$
1	$x_{n+2} - 3x_{n+1} + 2x_n = 4n$
	Z[xn+2]-3Z[xn+1]+2Z[xn]=Z[
	72[0/2]
	$Z^{2}\left[\chi(z)-\chi_{o}-\frac{\chi_{1}}{z}\right]-3Z\left[\chi(z)-\chi_{o}\right]$
	$+2\chi(z)=z$ $z-4$
	Z-4
	20 = Q = x1=1
	=> 72[x(z)-1] == [->7
	$\Rightarrow z^{2}\left[x(z) - \frac{1}{z}\right] - 3z\left[x(z)\right]$
	+2x(z)=z
	2-4
	$\Rightarrow z^{2} [x(z) - y_{z}] - 3z x(z) + 2x(z) = \frac{z}{z-4}$
	$\Rightarrow \chi(z) \left[z^2 - 3z + 2 \right] - z = \frac{z}{z - 4}$
-1 z	I to the second
Z+2	$\Rightarrow \chi(z) \left[z^{2} - 3z + 2 \right] = z + z$
	$= Z + Z^{2} - 4Z$ $Z - 4$
	Z-4
	$\chi(z) = \frac{z^2}{(z-4)(z^2-3z+2)}$
	$(7-4)(7^2-37+2)$



e 51) cos 5 + isin 5	Programs: Date
$= e^{5i} \left\{ \frac{z^2 - z(e^{-3i} + e^{3i}) + e^{5i}}{z^2 - z(e^{-3i} + e^{3i}) + e^{5i}} \right\}$	$Z\left[\sin(3m+5)\right] - Z\sin 2 + 2\sin 5$ $Z^{2} - 2Z(\cos 3 + 1)$
$= e^{5i} \left\{ \begin{array}{c} z^2 - z(\cos 3 - i\sin 3) \\ \hline z^2 - zz(\cos 3 + i) \end{array} \right\}$	
$= \frac{(\cos 5 + i \sin 5)(z^2 - 2\cos 3 + i z \sin 3)}{z^2 - 2 \cos 3 + i}$	
$= z^{2}(0.55 - 2.0053.0055 + i 2.0055.03 + i 2^{2}sinz - i 2.5i)$ $= z^{2} - 2.2.0053 + 1$	5 cos 3 - Zsin 3 sin 5)
$= Z^{2}(055 - Z)(053(055 + 5in35in5) + iZ(0555)$ $= Z^{2}(055 - Z)(053(055 + 5in35in5) + iZ(0555)$	n3-sin5cos3 tiz2sinZ
$= z^{2}\cos 5 - z\cos(3-5) + iz\sin(5+3) + iz^{2}\sin z$	
$z^{2}-2z(\cos 3 + 1)$ $= z \left[e^{i(3n+s)}\right] = z^{2}(\cos 5 - z(\cos 2 + iz)\sin 2\theta)$	2+1° z zsinz
Z ² -27Cos3+1	
	_ >
$ z \left[\cos (3n+5) \right] = z^2 \cos 5 - z \cos 2 $ $ z^2 - 2z \cos 3 + 1 $	
+	A LONG TO THE REAL PROPERTY OF THE PERTY OF

	ind z transform of (n+1)(n+2)an
→	$= \frac{(n+1)(n+2)a^n}{2!} = \frac{\infty}{n=0} \frac{(n+1)(n+2)a^nz^n}{2!}$
Put	$\frac{-1.2}{2!} \frac{a^{0}}{z^{0}} + \frac{9.3}{2!} \frac{a!}{z!} + \frac{3.4}{2!} \frac{a^{2}}{z^{2}} + \frac{1}{2!} \frac{1}{z^{2}}$
	$\frac{2\cancel{4}\cdot\cancel{5}}{\cancel{2}\cancel{1}}\frac{\cancel{0}^{3}}{\cancel{2}^{3}}+\cdots$
	= 1+3a + 803.2/a 2
	$= 1 + 3a + 3 \cdot 2 \left(\frac{a}{2} \right)^{2} + 2 \cdot 5 \left(\frac{a}{2} \right)^{3} + \cdots$
	$= \frac{1+3a+3.4(9/z)^{2}}{z}, \frac{3.4.5(9)^{3}}{3!}$
^	a factoring
	$=\left(1-\frac{\alpha}{z}\right)^{-3}$