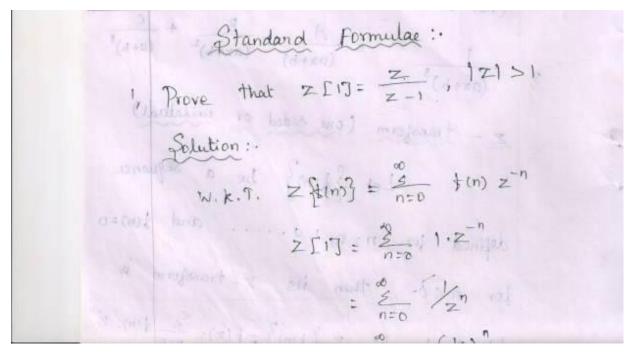




TOPIC 2: Problems based on Z transforms



$$= (\frac{1}{z})^{2} + (\frac{1}{z})^{2} + \cdots$$

$$= (\frac{1-\sqrt{z}}{z})^{-1}$$

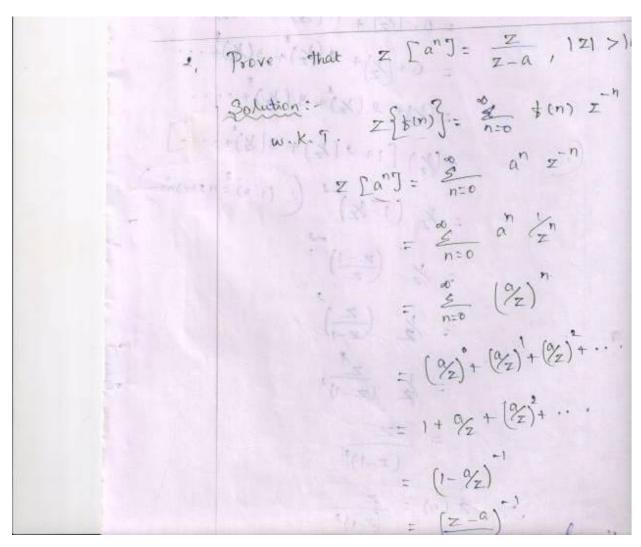
$$= (\frac{z-1}{z})^{-1}$$

$$= \frac{z}{z-1}$$

$$= \frac{z}{z-1}$$
hence it is proved//.











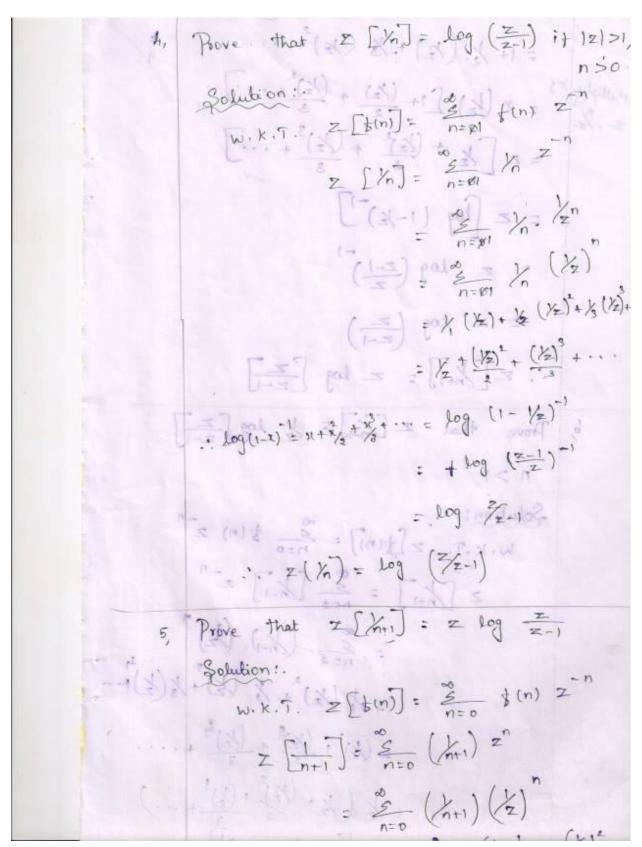
3 Prove that
$$Z(n) = \frac{Z}{(z-1)^2}$$
 $|z| > 1$

Solution:

 $U(x, x) = \frac{Z}{x}$ $|x| = \frac{Z}{x}$
 $Z(n) = \frac{Z}{(z-1)^2}$
 $Z(n) = \frac{Z}{(z-1)^2}$

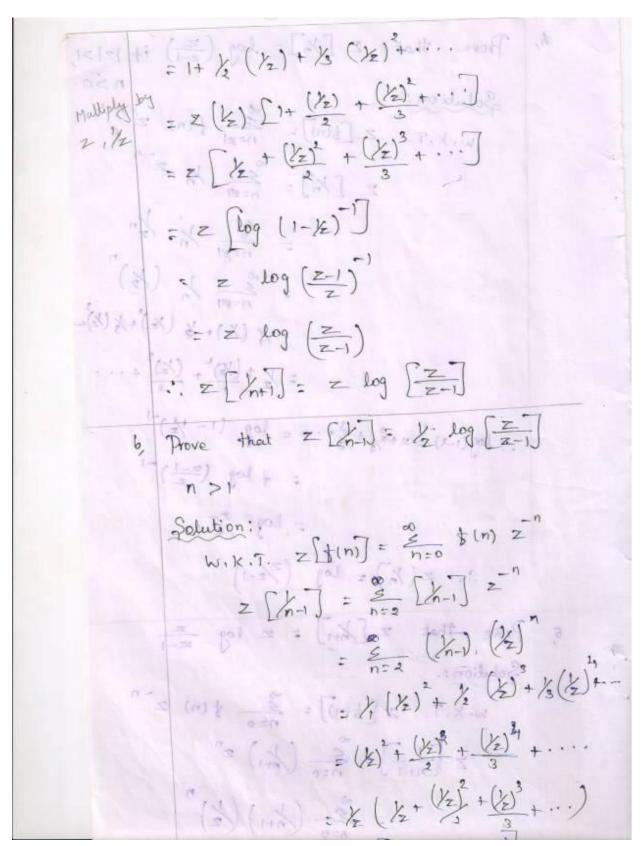






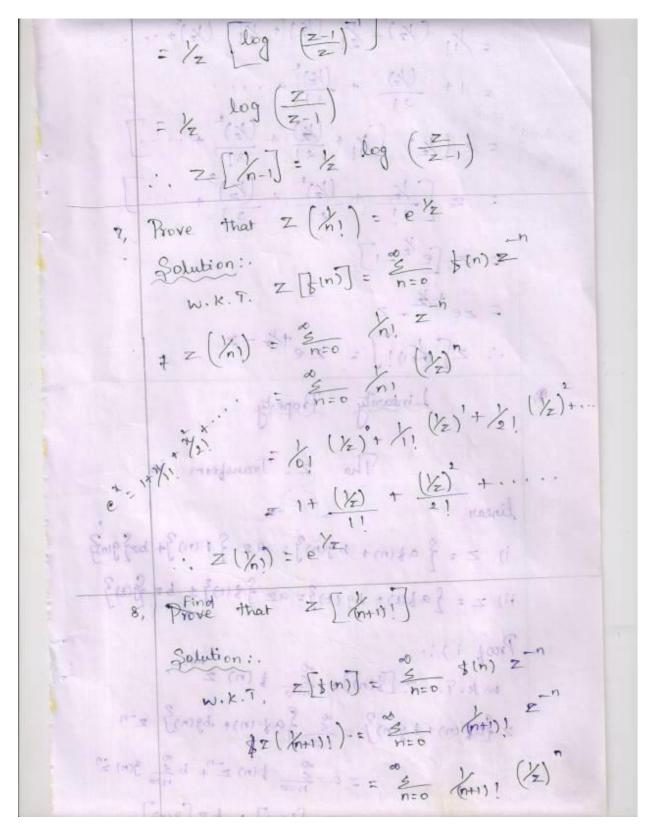






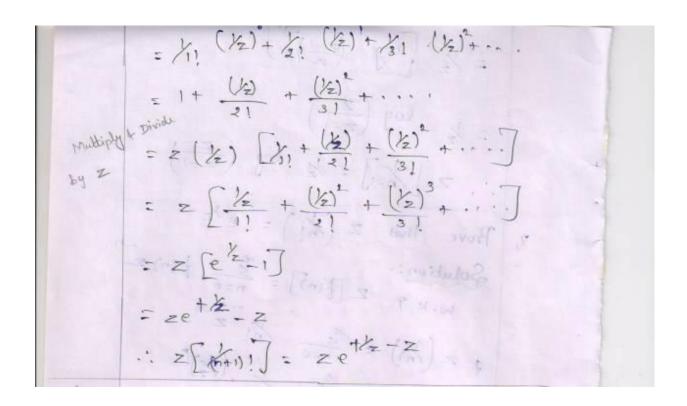


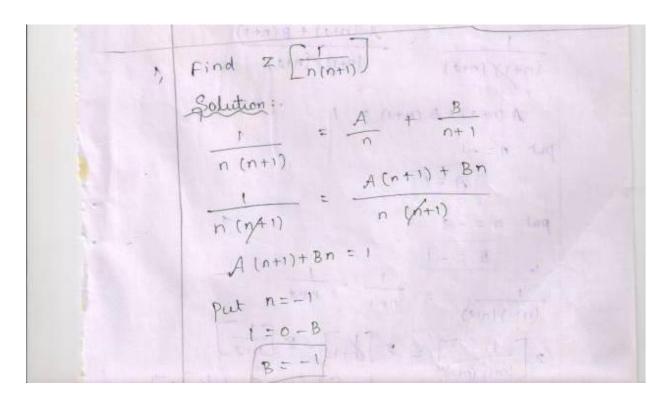


















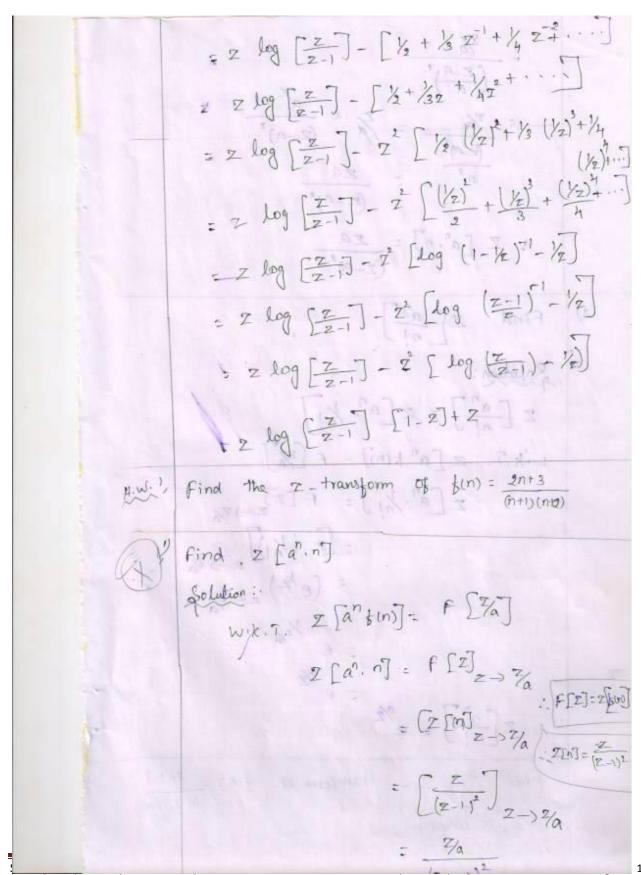


put
$$n=0$$
,

 $1 = A+0$
 $A=1$
 $1 = A+0$
 $A=1$
 $2 = A+0$
 $A=1$
 $2 = A+0$
 $2 = A+0$
 $3 = A+1$
 $3 = A+1$
 $4 = A+1$

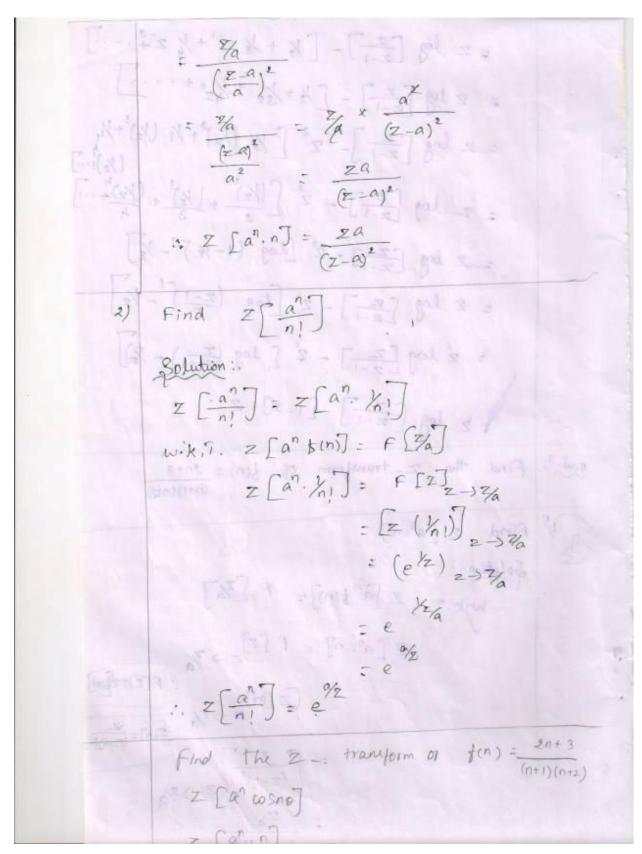
















$$\frac{2n+3}{(n+1)(n+2)} = \frac{A}{n+1} + \frac{B}{n+2}$$

$$\frac{2n+3}{(n+1)(n+2)} = \frac{A(n+2)+B(n+1)}{(n+1)(n+2)}$$

$$\frac{2n+3}{(n+1)(n+2)} = \frac{A(n+2)+B(n+2)}{(n+1)(n+2)}$$

$$\frac{2n+3}{(n+1)(n$$





	$= \left(\frac{z_0}{z_0} - \cos 0 \right) \qquad \left[\frac{\varepsilon + ns}{ \sin s } \right] = 1$
	7/2-2000+9/2 madulo?
i)	Find Z [n] the 2 Exert (see)
	Solution: (1+1) 2 + (2+1) 2 w.k.f. z[n+(n)] = -2 dz[f(z)]
	z [n.n] = -2 de [z[n]]
THE RESERVE	
	$\frac{d_{2}(\frac{1}{2})}{\sqrt{2}} = \frac{1}{\sqrt{2}} = -2 \left[\frac{(z-1)^{2}(1) - z \cdot 2(z-1)}{(z-1)^{4}} \right]$
	$z - z \left[(z/1) \frac{(z-1)(z-1-2z)}{(z-1)^{4} 3} \right]$
HINE	$z + \alpha z^{2} - z \int_{-\infty}^{\infty} \frac{z - 1 - 2z_{1}}{(z_{1}^{2})^{3}} \frac{1}{(z_{1}^{2})^{3}}$
	$(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$ $(z+1)^{3}$
	$\frac{1-2}{(z-1)^3}$
	$\begin{bmatrix} z \\ z \end{bmatrix} = \begin{bmatrix} z \\ z \end{bmatrix}$
	0,000 0 1 6
	$\frac{z^2+z}{(z-1)^3}$
	$\therefore \Sigma \left[n^2 \right] = \frac{z^2 + z}{(z-1)^3}$
	1 (1) (20)=x] = =





2	Find the 2-transform of (n+1) (n+2)
	z = z + 2n + 2
	= \ n + 0
	027+3213
	$\frac{z_{1}}{z_{2}} = \frac{z_{1}(z_{1})}{z_{2}} + 3 z_{1} z_{1} + 2 z_{1}$ $\frac{z_{1}}{z_{2}} = \frac{z_{1}(z_{1})}{(z_{1})^{3}} + 3 z_{1} z_{1} + 2 z_{1}$
	7 ACOUS = 2 (2-1) (2-1)
	= (z+1) + 3 z (z-1) +2 z (z-1)
	$\frac{(z-1)^{2}}{z} = \frac{z}{(z-1)^{2}} = \frac{(z-1)^{2}}{(z-1)^{3}}$
	7+ 7 + 3 z - 3 z
	E 1 3/2-82+27- X2+2/2
	$= \frac{z + 41 - 41}{(z - 1)^3}$
	$= 2 z^3$
	$(3)\frac{1}{2} = (3)(2-1)^{\frac{3}{2}} = 3$ $(3)\frac{1}{2} = (2-1)^{\frac{3}{2}} = 3$ $(3)\frac{1}{2} = (2-1)^{\frac{3}{2}} = 3$ $(3)\frac{1}{2} = (2-1)^{\frac{3}{2}} = 3$ $(4)\frac{1}{2} = (2-1)^{\frac{3}{2}} = 3$ $(4)\frac{1}{2} = (2-1)^{\frac{3}{2}} = 3$
	(TANA) = (-1)
	3. If $f(z) = Z \int_{-1}^{2} \frac{z - \cos a\tau}{z^2 - 1 \cos a\tau + 1}$ find $f(0)$ Ly find $\lim_{t \to \infty} f(t)$
- (h	1 1 1 lim + 1+1
	F-30 - 37
	Solution:
1	W. K.T. By Initial value theorem,
	$f(0) = \lim_{n \to \infty} F(2) \frac{1}{(n+n)^n}$
	\$ (0) = (0) P(2) P(2) P(2)





