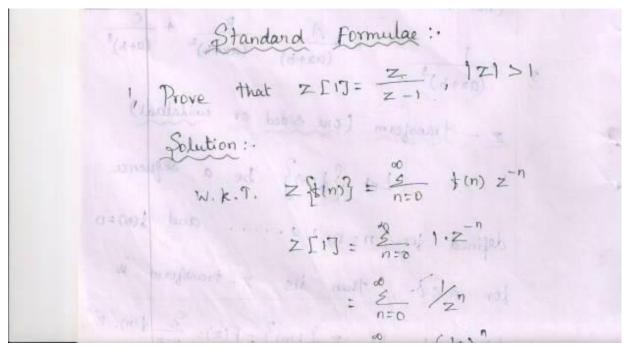




#### **TOPIC 2: Problems based on Z transforms**



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

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

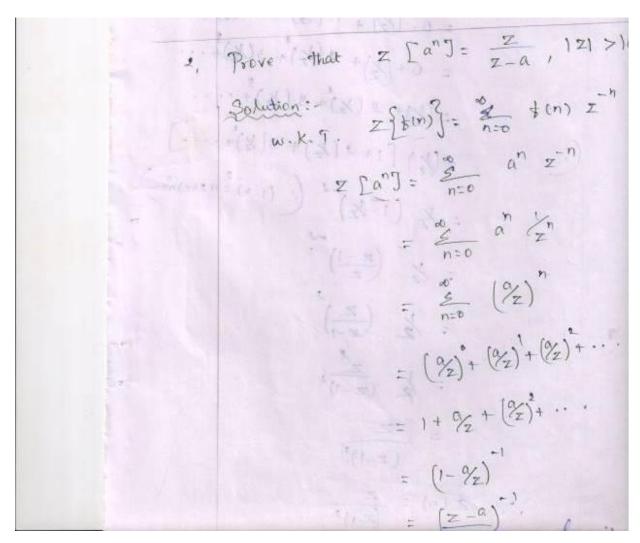
$$= (\frac{z-1}{z})^{-1}$$

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

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











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

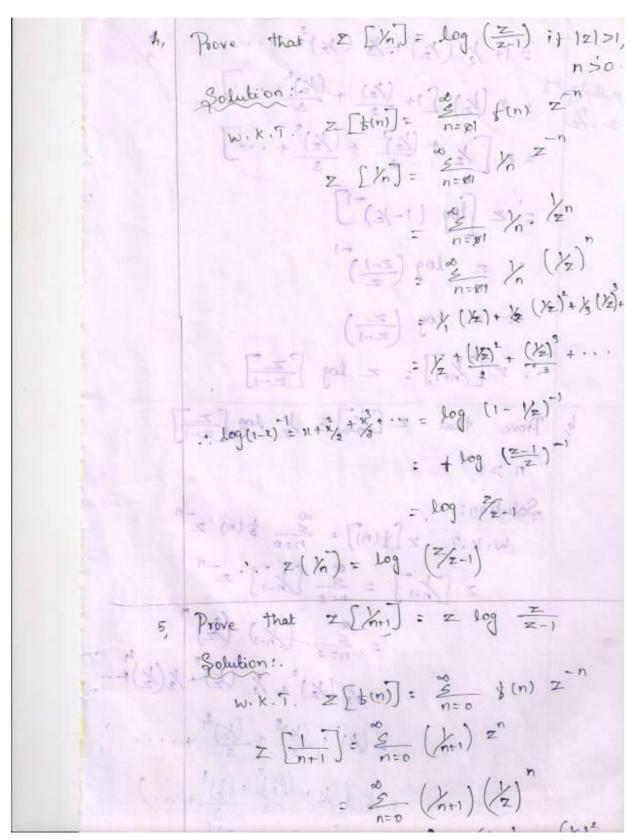
Solution:

$$Z(n) = \frac{Z}{n-0} \quad |Z| = \frac{Z}{n-0}$$

$$Z(n) = \frac{Z}{n-0} \quad |Z| = \frac{Z}{n-0} \quad |Z|$$

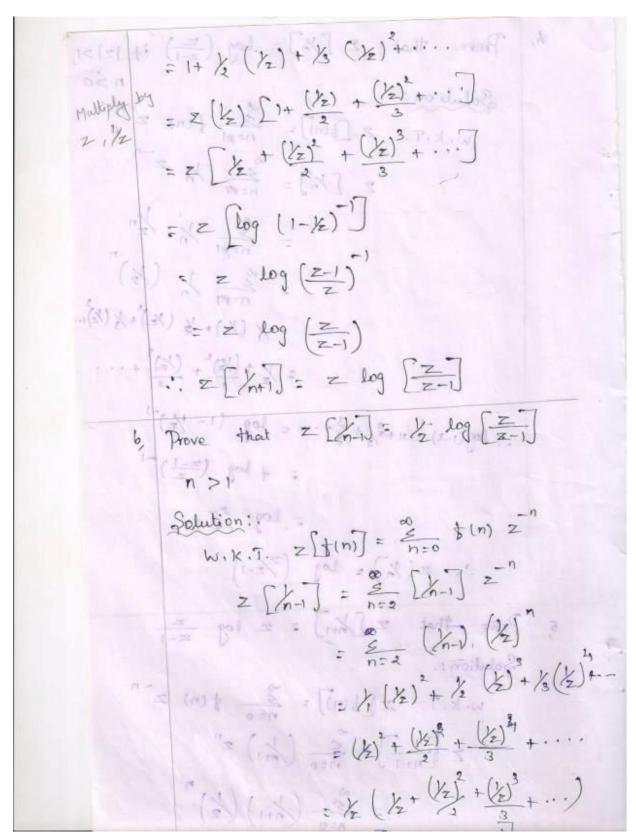






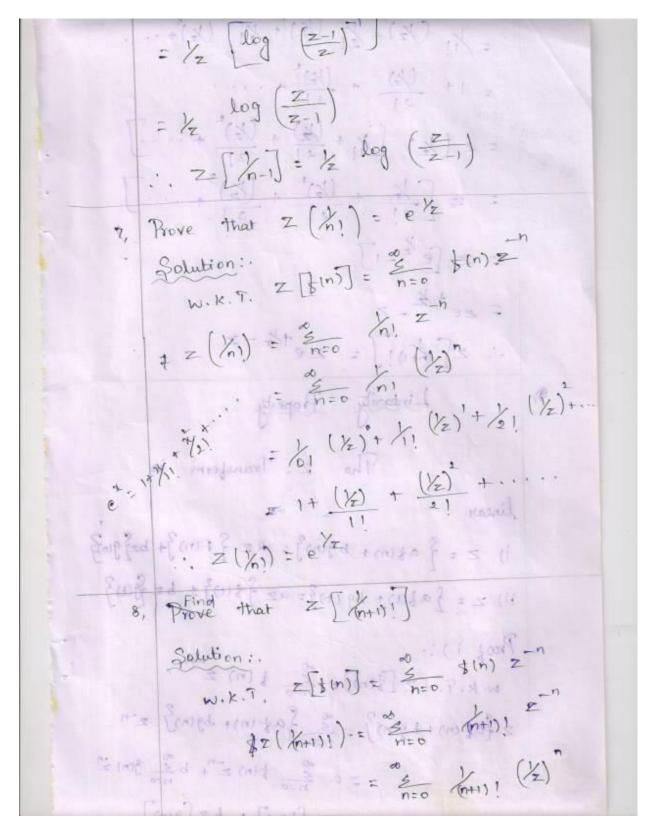






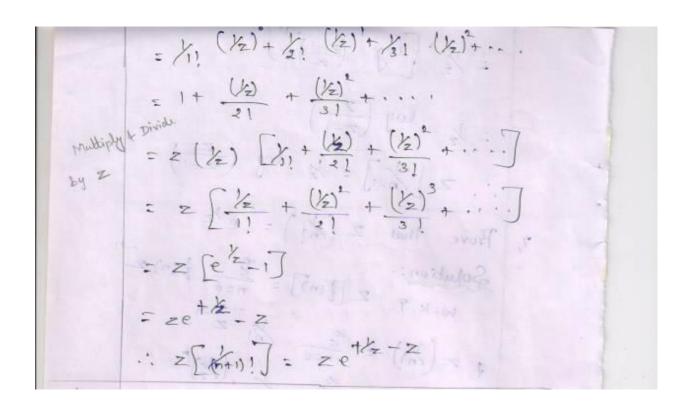


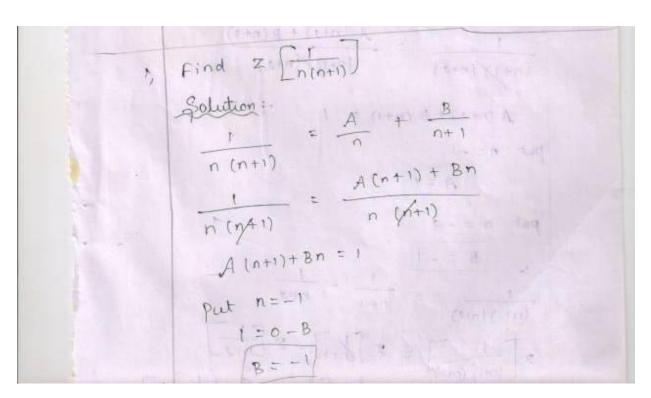














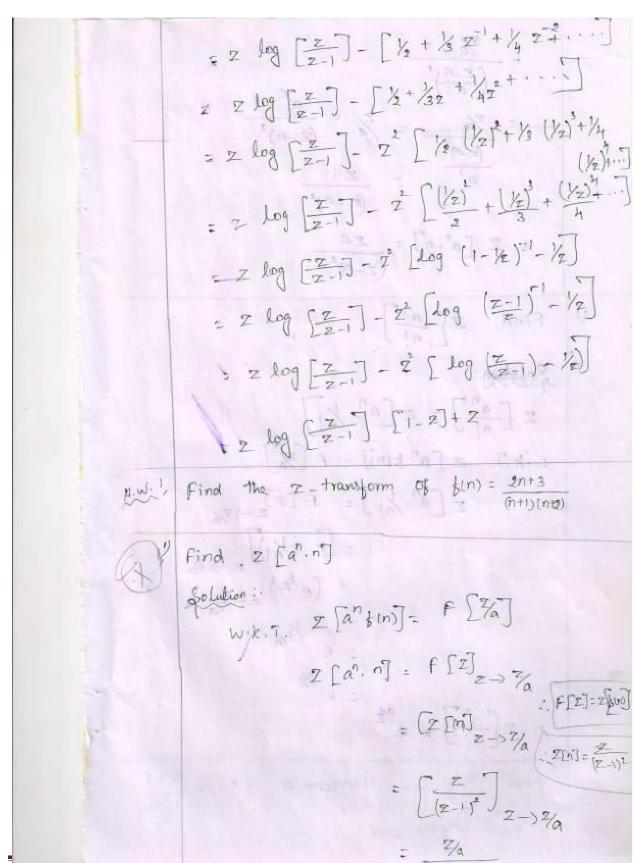






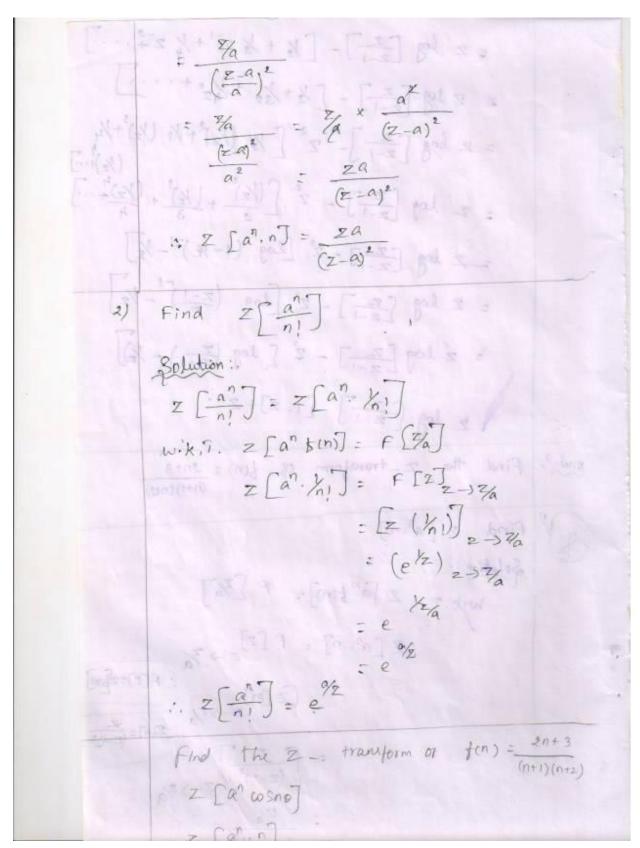
















Solution:

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

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$= \left( \frac{2n+1}{2n} - \cos \delta \right)$
7/2 - 2 cos 0+ 9/2 modulo?
Find Z [n2] the 2 Exert (there)
Solution: (1 +10) 2 + (2 +10) 4 w.k.T. z[n+in] = - 2 & [f(z)]
z [n.n] = -2 de [z[n]]
$\frac{z}{z-z}$ $\frac{z}{4z}$ $\frac{z}{(z-1)^2}$
$\frac{d_{2}(\%)}{\sqrt{z}} = \frac{vdu - udv}{v^{2}} = -z \left[ \frac{(z-1)^{2}(1) - z \cdot z(z-1)}{(z-1)^{2}} \right]$
= -2 [(2/1) t=-1) (2-1-22)
2 mi = + 2 1 2 -1 - 2 2 m) (z -1) (z -1)
$\begin{bmatrix} \sqrt{2} & \sqrt{2} & \sqrt{2} \\ \sqrt{2} & \sqrt{2} \end{bmatrix} = \begin{bmatrix} -1 - \sqrt{2} \\ \sqrt{2} - \sqrt{3} \end{bmatrix} = \begin{bmatrix} -1 - \sqrt{2} \\ \sqrt{2} - \sqrt{3} \end{bmatrix}$
[ (z-1)30 m)
$\sum_{z=1}^{n} \frac{1}{z} = \sum_{z=1}^{n} \frac{1}{z} + 1$
= z+z (m) no = (c)
$(z-1)^3$
$\sum_{n=1}^{\infty} \left[ \frac{z^2 + z}{(z-1)^3} \right]$
11 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (1 (





Find the 2-transform of (n+1) (n+2)
Fina
Solution 1.4 Facos 25 - 3
$\frac{\text{Solution}}{Z\left[(n+1)(n+2)\right]} = Z\left[n^{2} + 2n + n + 2\right]$
Z [ (n+1) (n+2)
$Z = \sum_{n=1}^{\infty} \sum_{n=1}^{\infty} \frac{1}{2} \sum_{n=1}^$
27 2 27
$\frac{1}{(z-1)^3} = \frac{\sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{i=1}^{n} \sum_{j=1}^{n} \sum_{j=1}^{n$
PACOLE _ Z (2-1) (2-1)
(Z-1) 1 2 (Z-1)
Z (Z+1) + 3 Z (Z-1) + Z-1
$\frac{(z-1)^{2}}{z} = \frac{(z-1)^{2} + 2z(z-1)}{z}$ $\frac{z}{(z-1)^{2}} = \frac{(z-1)^{2} + 2z(z-1)}{(z-1)^{3}}$ $\frac{z}{(z-1)^{3}} = \frac{(z-1)^{2}}{(z-1)^{3}} = \frac{(z-1)^{2}}{(z-1)^{3}}$
z + z + 3z - 3z + 2z (z-2z+1)
$= \underbrace{\cancel{z}_{+1}}^{3} + 2\cancel{z}_{+2}^{3} + 2\cancel{z}_{+2}^{2} + 2\cancel{z}_{-1}^{2}$ $= \underbrace{\cancel{z}_{+1}}^{3} + 2\cancel{z}_{-1}^{3} + 2\cancel{z}_{-1}^{2} + 2\cancel{z}_{-1}^{2}$
= \frac{\x}{4} + \frac{3}{7} - \frac{8}{2} + \frac{7}{2}
$= \frac{z + 4 \cdot 4 \cdot 1}{(z - 1)^3}$ $= \frac{z \cdot 2^3}{z \cdot 2^3}$ $= \frac{z \cdot 2^3}{z \cdot 2^3}$ $= \frac{z \cdot 2^3}{z \cdot 2^3}$
= 2 Z <sup>3</sup>
(3) $\frac{1}{2} = (3)(2-1)^{3} = 3$ and $\frac{1}{2} = \frac{1}{2} = \frac{3}{2} = \frac{3}{2}$
$\sqrt{2}\left((n+1)\left(n+2\right)\right) = \frac{22}{5}$
(E-09aT)
If $f(z) = \frac{z}{z} \int \frac{z - \cos a\tau}{z^2 + z \cos a\tau + 1}$ find $f(0)$ Let find $\lim_{t \to \infty} f(t)$ Solution:
(minero-s) = + (n) (razo - + 7 = 2 cosa + + )
& find lim (t)
F-900 0 F - 37
Solution: Passed -1 =
w.k.T.
By Initial Value mooters,
W. K.T.  By Initial value theorem,  Lin F(Z)
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