



 $\Rightarrow f(z) = \frac{F(z)}{1+i}$ \Rightarrow $f(z) = e^{z} + \frac{c}{1+i}$ Transformation Complex valued function 02 complex variable $\omega = f(z)$ Can a transformation 02 treated points as into points of W-plane. plane B Ipoint Invariant Fixed on invariant (or) fixed points The transformation w = f(z) is given by the the equation Z=f(z). Solving the invariant points B Find Sol





mvoriant the 2 pointa Find transformation w= 241 501 The invariant point one by ZE ZS = 2= Z 3 point 3) moriant the Find Sol Invariant points are given by Ace = 22+6





Find and the fixed points A on the 6z_9 mapping w = i de al fixed points are The given 62-9 =) z 62-9 2-62+9 =0. $(z-3)^2 = 0$ 3.3 Bilinear Transformation cransformation 02 the form wad. Bilinean transformation. Cross - Ratio $(z_{2}, z_{3}) = (z_{2}, z_{3})$



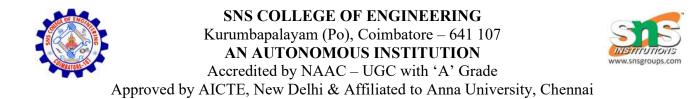


the Bilinean transformation which (13) Find point d, i, o g maps plane 0) into i, ab the W-plane -Sol plane. plane Z1=00 W2= Z2= i Z3 =0 wa= The Bilinoca formation given by U, (ω, ω) W2, Wa (Z, Z1, Z2 (z-z) (Z) w-wi wo-wa $(\omega - \omega_2)$ (wo w D w=





Z-plano lane WITO 21=1 N2=1 23=-1 Wa = as The Bilinear transformation by given N $(\omega, \omega_1, \omega_2)_{3=} (z, z_1), z_2, z_3$ $(\omega - \omega_1) (\omega_2 - \omega_3) (z_2, z_3)$ $(w_2 - w_3)$ (z-z₁) (z₂) $(\omega_2 - \omega_1)$ (2-23) (22 × (z-1) (i+1)1-0 (Z+1) (i-1) $\omega =$ =) L-IZ w= (2+L)) Z+1Bilinear transformation that 31 the Find



$$Z_{-plans} \qquad M-plans$$

$$Z_{1} = o \qquad w_{1} = i$$

$$Z_{2} = -1 \qquad w_{2} = o$$

$$Z_{3} = i \qquad w_{3} = o$$

$$The Bitnean transformation w given by$$

$$(w, w_{1}, w_{2}, w_{3}) = (z, z_{1}, z_{2}, z_{3})$$

$$(w - w_{1})(w_{2} - w_{3}) = (z - z_{1})(z_{2} - z_{3})$$

$$(w - w_{1})(w_{2} - w_{3}) = (z - z_{3})(z_{2} - z_{3})$$

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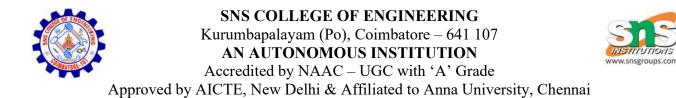
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the Bilinear transformation that A Find points 1, i, -1 of Z-plane maps onto i, o, -i og W-plane. 80) z-plane W-plane. $Z_{1} = 1$ W1=0 Za=i W2=0 23=-W3=-1 171) - (1-1 The Bilinear transformation given by ò $(\omega, \omega_1, \omega_2, \omega_3) = \cdots$ (z, z1, z2, z3) $\frac{(\omega-\omega_1)(\omega_2-\omega_3)}{(\omega-\omega_3)(\omega_2-\omega_1)} =$ (z-z) (z2-z3 (2-23) (22-21 $(\omega - i) (o + i) =$ (z-1)(i+1)(w+i) (o-i) $w_{-i} = + i(z_{-i})$ Wfl



140 w 142 6 Find bilinear transformation that point an ms 0 the Z-P ano inte the Doint the ano Sol ZI 5 W1= 2





$$\frac{(\omega - \omega_{1})(\omega_{2} - \omega_{3})}{(\omega - \omega_{3})(\omega_{2} - \omega_{1})} = \frac{(z - z_{1})(z_{3} - z_{3})}{(z - z_{3})(z_{3} - z_{1})}$$

$$\frac{(\omega - a)(z_{1} + a)}{(\omega + a)(z_{1} - a)} = \frac{(z - z_{1})(z_{1} + z_{1})}{(z_{1} + z_{1})(z_{1} - z_{1})}$$

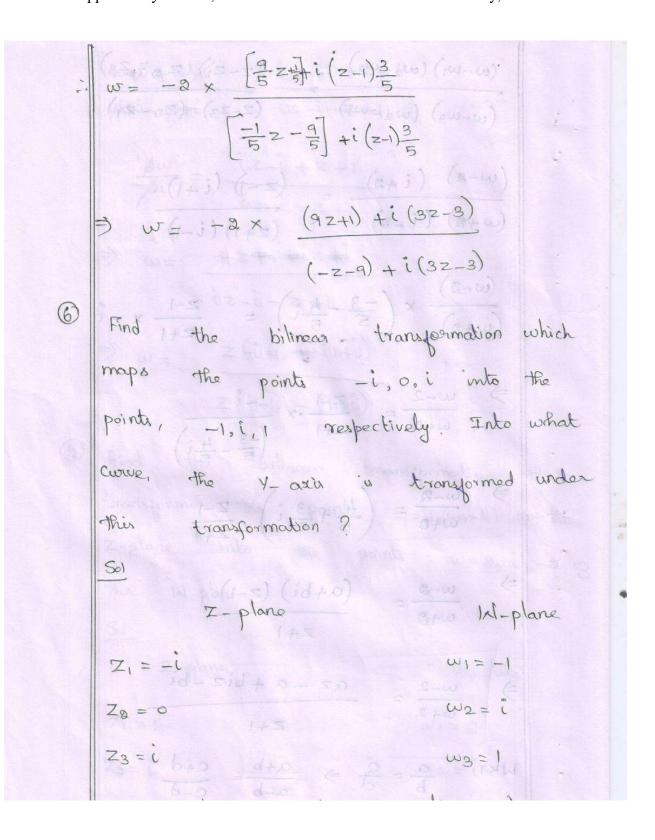
$$\frac{(\omega - a)}{(\omega + a)} \times \left(\frac{-3}{5} - \frac{z_{1}}{5}z_{1}\right) = \frac{z_{1}}{z_{1}} \times -z_{1}$$

$$\Rightarrow \frac{\omega - 2}{\omega + a} = \frac{z_{1}}{z_{1}} \times \frac{-z_{1}}{(z_{1} - z_{1})(z_{1} - z_{1})}$$

$$\Rightarrow \frac{\omega - a}{\omega + a} = \left(\frac{4}{5} + \frac{3}{5}z_{1}\right) \cdot \frac{z_{1}}{z_{1}}$$

$$\Rightarrow \frac{\omega - a}{\omega + a} = \frac{(a + bi)(z_{1} - z_{1})}{z_{1} + z_{1}}$$









 $\frac{(\omega+1)(i-1)}{(\omega-1)(i+1)} = \frac{(z+i)(o-i)}{(z-i)(o+i)}$ $w+1 = d_{1100} iz - 1_{00}d_{110}$ w-1 = z-i z-i (z-z) (z-z) $-= \frac{c}{d} = \frac{a+b}{a-b} = \frac{c+d}{c-d}$ (q-5) (x-5 w+l+w-l iz-l+z=l $\frac{8}{3} = \frac{(i+1)z - (i+i)}{(i-1)z - (i-i)}$ $\omega = \frac{(i+1)z - (1+i)}{(i-1)z - (1-i)}$