a) Perform
$$\frac{21}{22}$$
 d'express in rect. form

$$\frac{2}{2} = \frac{3-i}{2} \cdot \left(\frac{-i}{2}\right) = \frac{3i+i^2}{-2i^2} = \frac{3i-1}{2} = \frac{3}{2}i - \frac{1}{2} = \frac{3}{2}i + \frac{3}{2}i$$

$$\left| \frac{1}{2} + \frac{3}{3} \right| = \sqrt{(-\frac{1}{2})^2 + (\frac{3}{2})^2} = \sqrt{(\frac{1}{4} + \frac{9}{4})} = \sqrt{\frac{10}{4}} = \sqrt{\frac{10}{2}}$$

$$x = -\sqrt{3}$$

$$y = -3$$

$$Q = tun^{-1}(\frac{1}{2}) = tun^{-1}(\frac{13}{2}) = tun^{-1}(\sqrt{3}) = -120^{\circ} \text{ or } -2\pi/3$$

$$|Z_1| = \Gamma_1 = \sqrt{3^2 + 2^2} = \sqrt{13}$$

$$z_2 = -1 + 3i$$
 $\Rightarrow |z_2| = r_2 = \sqrt{(-1)^2 + 3^2} = \sqrt{10}$ $\Rightarrow z_2 = \sqrt{10}e^{-0.397\pi}$ $\Rightarrow |z_2| = r_3 = \sqrt{10}e^{-0.397\pi}$

$$tan^{-1}(\frac{3}{10}) = \theta_2 = -0.39717 = -1.249$$

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$$= -0.584817 \cdot \frac{180}{10} = 105.26^{\circ} \implies Z = \sqrt{\frac{13}{10} \cdot \cos(105.26) + \sqrt{\frac{13}{10}} \cdot \sin(105.26)}$$

$$= -0.384817 \cdot \frac{180}{10} = 105.26^{\circ} \implies Z = -0.3 + 1.10 \cdot \frac{1}{10} \cdot \frac{1}{10}$$

Find all possible rooms of ()
$$G = \frac{1}{1} = \frac{1}{10} = \frac{1}{10}$$

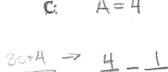
$$\frac{1}{(\cos\frac{\pi}{6} + j\sin\frac{\pi}{6})} = \frac{1 \cdot (\cos\frac{\pi}{6} + j\sin\frac{\pi}{6})}{(\cos\frac{\pi}{6} + j\sin\frac{\pi}{6})}$$

Z=-03+1.10)

```
5) Solve the IVP
                                                                                              let dv= endt -> v= ent => Judv= uv-Jvdu
x+x=sin(t),x(0)=-1

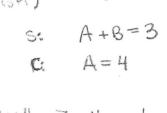
M(t)=e = e t
                                                                                                                                                                                                                                      = sin(t). ent - Scost. ent dt
\int \frac{d}{dt} (e^{nt} \times) = \int e^{nt} \sin(t) dt
                                                                                                                                                                                                                  let u = cost -> du= -sm6 db
                                                                                                                                                                                                                 let dv= est.dt >v= est
xe*= ext(sint-cat)+C
                                                                                                          sin(t).ext-(cos(t).ext-Jext. (-sin(t))dt
                                                                                               Jest sin(t)dt = sint.ext-costette ext sint dt
X = sint-cust + Ce-*t
                                                                                                       2 Sext sint dt = sin t-ext-cost ext
\chi(0) = \frac{O-1}{2} + C \cdot 1 = -1
                                                                                                    Jet sint dt = et (sint-cut) + C
\frac{1}{2} \times \frac{\sin t - \cos t}{2} = \frac{1}{2}e^{-t} = \frac{1}{2}e^{-t}
6) x+4x=17cost ,x(0)=-1,x(0)=0
                                                          q(t) = 17cost => xp = Acost+Boint ; xp2 =- Aoint+Boost xp2 =- Acost-Boint
r2+4r=0
                                                                 Aug in: -Acost-Bomt +4 (-Aomt+Boost) = 17 cost
                                                                   -A+4B=17 -A-16A=17; A=-1

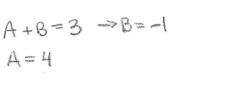
-B-4A=0 -> B=-4A - B=-4(-1)=4
r(r+4)=0
H-=7,0=7
X= C1+C2e-46
                                                                            X=C1+C2e-46-C05+46int > (x(0)=C1+C2-1=-1 C1=-1
                                                                             x=-4c2e4t+sint+4cost -> x(0) --4c2+4=0; c2=1
                                                                      : x(t) = e - cost + 4 sint - 1
0 = \sqrt{A^2 + B^2} = \sqrt{9 + 1} = \sqrt{10}
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0 = \sqrt{A^2 + B^2} = \sqrt{9 + 1} = \sqrt{10}
                                                                                         [: cos6+3 sint => 1/0 sin(6+03218)](6)
8) 25 e-at-bg (Tuble ect. f(6) = F(s-c)
= 2 \{ e^{-at} \cdot e^{-b} \} = \frac{1}{s+a} \cdot e^{-b} = \left| \frac{e^{-b}}{s+a} \right| (3)
                                                                                                                                                                                                                    [{q(6)}= = = = = 105 + 2e = 10 − 26
g(t) = \begin{cases} -1 & 0 < t < 1 \\ 1 & 1 < t < 2 \end{cases}
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(t) = \begin{cases} -1 & 0 < t < 
                                                                                                                                                                                                                    [ } & (B) = -1 + 2 e^2 - 8 - 2 =
                                                                                                                                                                                                                                              = -(e^{2s} - 2e^{-s} + 1) = -(e^{s} - 1)^{2}
```



2 8 = - = 4-e=

5(5+1)







3 8 5 8 3 A(6H) + 83