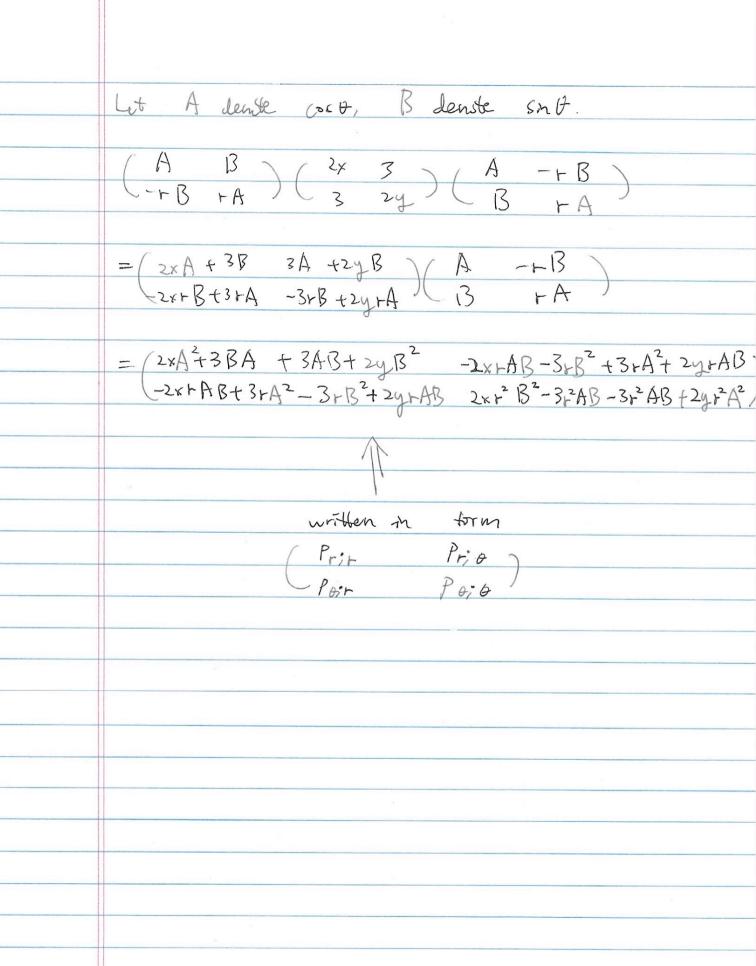
Schut = 5.12 (a)  $\beta$ ,  $p_{\chi} = (\chi^2 + 3\gamma, \gamma^2 + 3\chi)$  Cartessan. Pd, 8 = P = 2 × P<sub>1</sub>(2 = 3 P2/1 = 3 P2, 2 = 24  $\Lambda'_{i} = \frac{\partial x}{\partial r} = \cos \theta, \quad \Lambda'_{i} = \frac{\partial x}{\partial \theta} = -r \sin \theta$  $\Lambda^2 = \frac{\partial y}{\partial t} = \sin \theta, \quad \Lambda^2 = \frac{\partial y}{\partial \theta} = r\cos \theta$  $1^{\beta}$ ,  $1^{\beta}$  contracts  $1^{\beta}$  =  $1^{6}$  Sint  $1^{2}$   $1^{3}$   $1^{6}$  Contracts  $1^{3}$  =  $1^{6}$  Contracts  $1^{3}$  =  $1^{6}$  Contracts  $1^{3}$  =  $1^{6}$  Contracts  $1^{3}$  =  $1^{6}$  Contracts  $1^{6}$  Contr  $| \frac{1}{\sqrt{|P_x|^2}} = \frac{(\cos\theta) \sin\theta}{(-r\sin\theta)} = \frac{2x}{3} \frac{3}{2y} \frac{(\cos\theta) - r\sin\theta}{\sin\theta}$ 



Schutz 5ch  $p = p_{\alpha}, \tilde{w}n' = p_{\alpha} \tilde{w}^{\alpha}$ ad = 1d, an' => P, an' = Pala, wn' Pr = Pala  $\int_{A} = \left( x^{2} + 3y, y^{2} + 3x \right)$   $\int_{a}^{d} = \left( \frac{dx}{dr} \right) \frac{dy}{dr}$   $\frac{dy}{dr} = \left( \frac{dy}{dr} \right).$  $P_{n} = P_{n} \wedge A^{2} = (x^{2}+3y + y^{2}+3x) \begin{pmatrix} dx & dx \\ dy & dy \end{pmatrix}$  $= (x^2 + 3y y^2 + 3x) (\cos \theta - r \sin \theta)$   $(\sin \theta + r \cos \theta).$ =(x2+3yy2+3x)(A -rB) =(Ax2+3yA+By2+3xB -rBx2-+B3x+y2+A+3x+A) = ( rA3+3rAB+rB3+3rAB,-r3A2B-3r2AB+r3AB2+3r2A2)

he check Pi'; 1' component with part (6) Nonser aryonate it T: To = Tot = T. Tr = - r.  $P_{1/1}' = A^3 + 6AB + B^3$ Prop = A3+6AB+B3 - Till Pn = A3+6A13+B3 Davidor the 4,29-2024