$$A A^{T} = \begin{bmatrix} u_{1} & u_{2} & \cdots & u_{n} \\ v_{1} & v_{2} & \cdots & v_{n} \end{bmatrix} \begin{bmatrix} u_{1} & v_{i} \\ u_{2} & v_{2} \\ \vdots & \vdots \\ u_{n} & v_{n} \end{bmatrix} = \begin{bmatrix} \sum_{i} u_{i}^{2} & \sum_{i} u_{i}v_{i} \\ \sum_{i} u_{i}v_{i} & \sum_{i} v_{i}^{2} \end{bmatrix}$$

$$\therefore \det(AA^T) = (\Sigma m^2)(\Sigma Vi^2) - (\Sigma miv_i)^2$$

Principle Minor : Example :
$$\begin{bmatrix} u_1^2 + V_1^2 & u_1u_2 + V_1V_2 \\ u_2u_1 + V_2V_1 & u_2^2 + V_3^2 \end{bmatrix} = \begin{bmatrix} u_1 & V_1 \\ u_2 & V_2 \end{bmatrix} \begin{bmatrix} u_1 & u_2 \\ v_1 & v_2 \end{bmatrix} \begin{bmatrix} u_1 & u_2 \\ v_1 & v_2 \end{bmatrix}$$

$$\vdots \quad \text{both have same det}$$

$$\vdots \quad \text{Sum of prunciple minor} = \sum_{1 \le 1, i \le N} \begin{bmatrix} u_i & u_i \\ v_i & v_i \end{bmatrix}^2 \qquad \qquad \qquad \begin{bmatrix} u_i & u_3 \\ v_i & v_j \end{bmatrix} \begin{bmatrix} u_i & u_3 \\ v_i & v_j \end{bmatrix}$$

$$Q_3$$
. $||x_1 y||^2 = \langle x_1 y_1, x_1 y_2 = \langle x_1 x_2 + \langle y_1 y_2 + \langle x_1 y_2 + \langle y_1 x_2 \rangle ||x_1 y_2 + \langle y_1 y_2$

$$||x-y||^2 = \langle x-y, x-y \rangle = \langle x,x \rangle + \langle y,y \rangle - \langle x,y \rangle - \langle y,x \rangle$$
 (2)

$$||n+iy||^2$$
: $\langle n+iy \rangle$: $\langle n,u \rangle + \langle iy,iy \rangle + \langle n,iy \rangle + \langle iy,n \rangle$
= $\langle n,u \rangle + \langle y,y \rangle - i\langle n,y \rangle + i\langle y,n \rangle$ 3

$$|| x - iy ||^2 = \langle x - iy, x - iy \rangle = \langle x_1 x_2 \rangle + \langle y_1 y_2 \rangle + i \langle x_1 y_2 \rangle - i \langle y_1 x_2 \rangle$$

$$\therefore AA^{*} = I \qquad (whoe A^{*} = \overline{A}^{T})$$

$$=) A^* = A^-$$

$$A^* A = 1$$

$$\begin{bmatrix} c_1^* \\ c_2^* \end{bmatrix} \leftarrow \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_2 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_2 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_2 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_1 \\ c_2 \end{bmatrix} \leftarrow \begin{bmatrix} c_2 \\ c_2 \end{bmatrix}$$

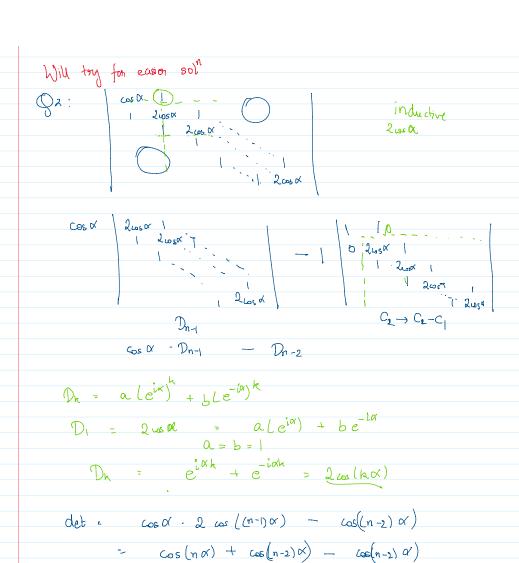
$$\langle n+y, 7\rangle = \langle n_1z\rangle + \langle y,z\rangle$$

 $\langle y,y+z\rangle = \langle n_1y\rangle + \langle n_1z\rangle$

$$AA^{*} = I \qquad (whore A^{*} = A^{T})$$

$$AA^{*} = A^{T} \qquad (whore A^{*} = A^{T})$$

Will try for easion sol



= coslna)