4 - 0 - 5

0 - 5 - 1

5 - 1 - 6

1 - 6 - 2

6 - 2 - 7

2 - 7 - 3

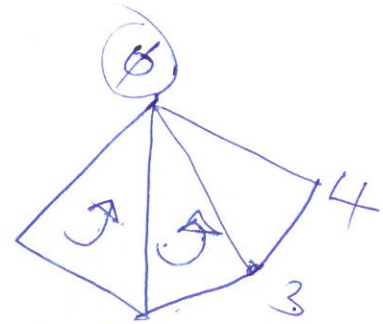
*7 - 3 - 3

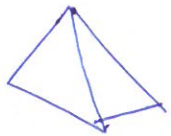
* 3 - 3 - 8

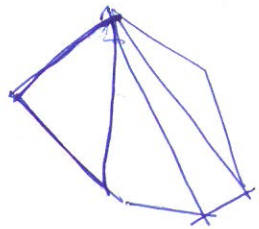
* 3 - 8 - 8

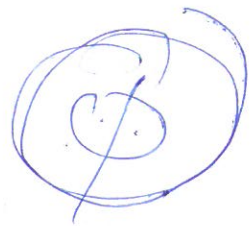
* 8 - 8 - 4

8 - 4 - 9









2

3

4

n

n - 2

34 bm

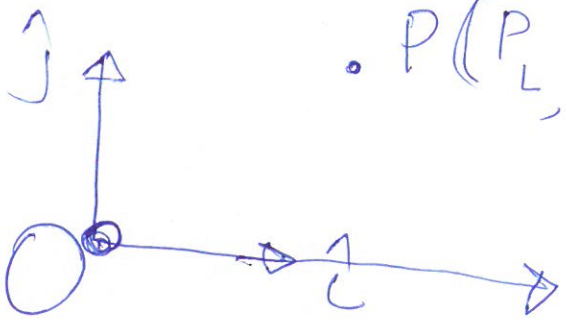
bm index = 2

Vertex = 32

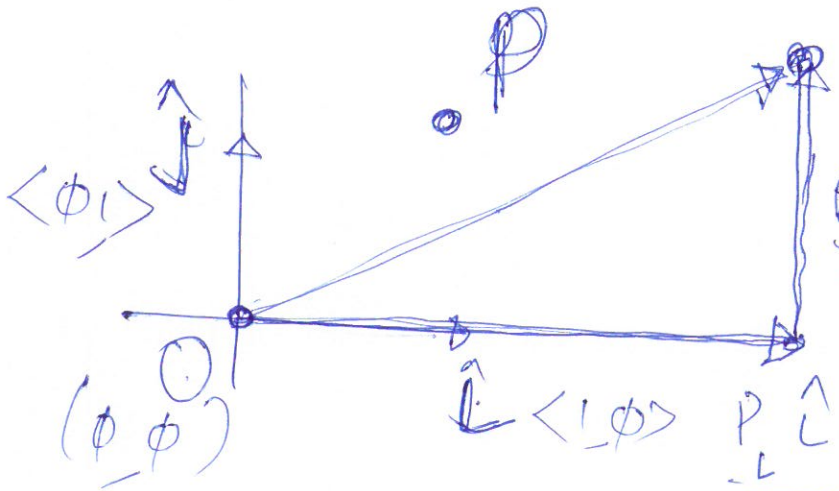
34

34 bytes/Δle

34bm



$$(1)\ P \equiv P$$
$$(\phi)\ P \equiv \vec{\phi}$$

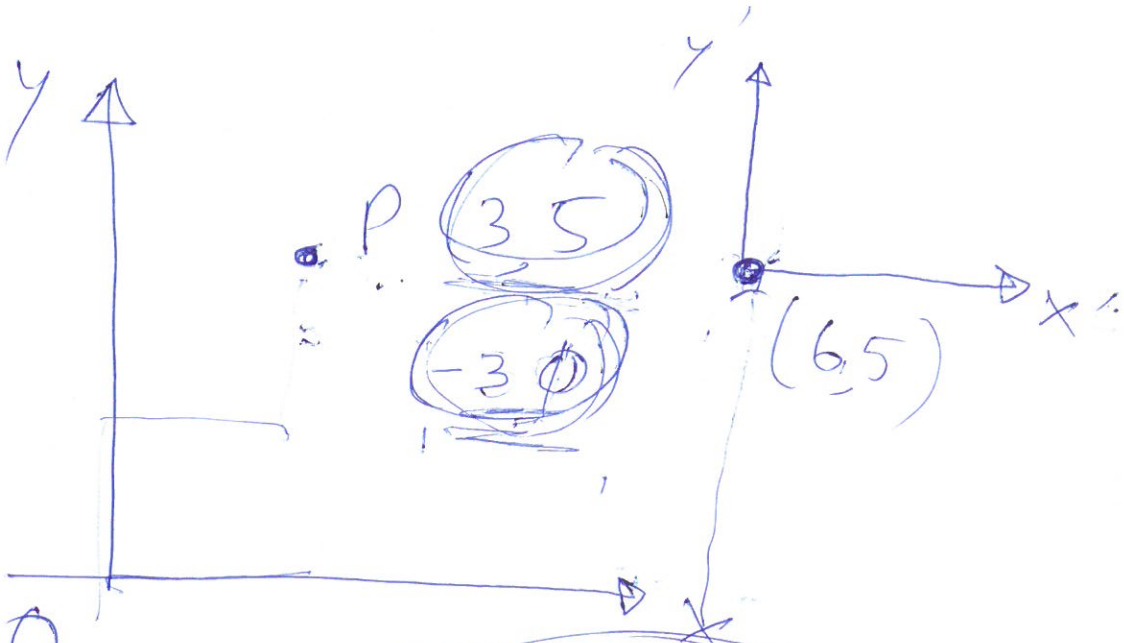


$$\underline{P} = \underline{P_i \hat{i} + P_j \hat{j} + \phi}$$
$$= \underline{P_i \hat{i} + P_j \hat{j} + (1)\phi}$$
$$= \begin{bmatrix} \hat{i} \\ \hat{j} \\ \phi \end{bmatrix} \cdot \begin{bmatrix} P_i \\ P_j \\ 1 \end{bmatrix}$$

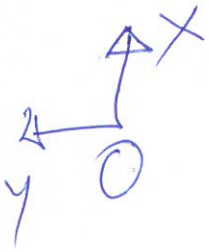
$$\phi + P_i \hat{i} + P_j \hat{j}$$

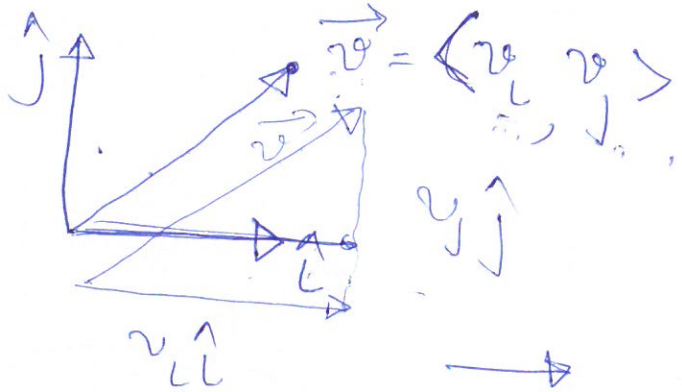
$$\begin{bmatrix} 1 & \phi & \phi \\ \phi & 1 & \phi \\ \phi & \phi & 1 \end{bmatrix} \cdot \begin{bmatrix} P_i \\ P_j \\ 1 \end{bmatrix} = [\hat{i}\ \hat{j}\ \phi] \cdot \begin{bmatrix} P_i \\ P_j \\ 1 \end{bmatrix}$$

$P = (3, 5)$



$$\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} 3 \\ 5 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 & 0 & 6 \\ 0 & 1 & 5 \\ 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} -3 \\ 0 \\ 1 \end{bmatrix}$$





$\vec{v} = \langle v_i, v_j \rangle$

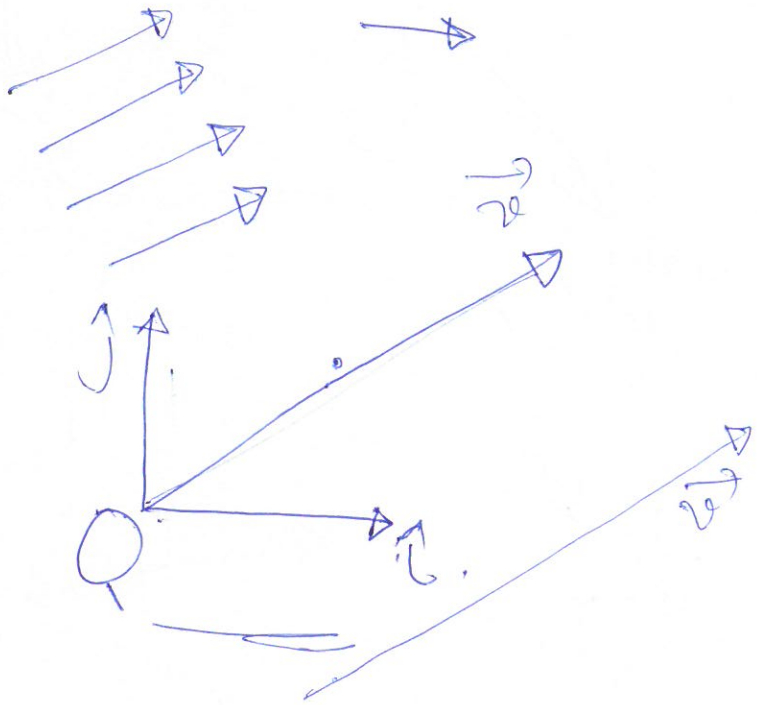
$S = \overline{S} + \phi$

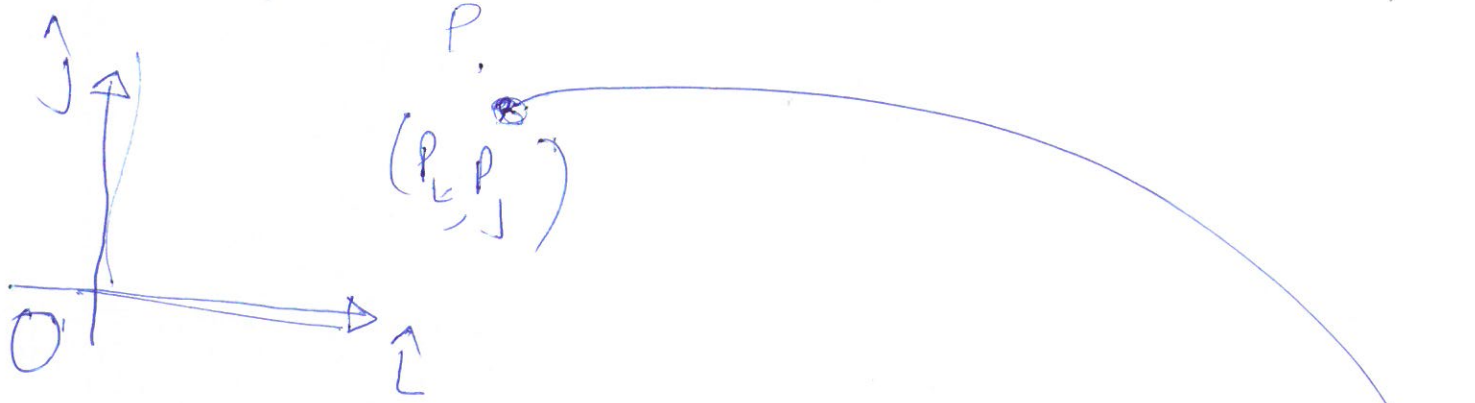
$\vec{v} = v_i \hat{i} + v_j \hat{j} + \vec{\phi}$

$= v_i \hat{i} + v_j \hat{j} + (\phi)\vec{0}$

$= \begin{bmatrix} \hat{i} \\ \hat{j} \\ 0 \end{bmatrix} \cdot \begin{bmatrix} v_i \\ v_j \\ \phi \end{bmatrix}$

$= \begin{bmatrix} \hat{i} & \hat{j} & 0 \end{bmatrix} \cdot \begin{bmatrix} v_i \\ v_j \\ \phi \end{bmatrix}$





$$P = P_L \hat{L} + P_J \hat{j} + 0\,O$$

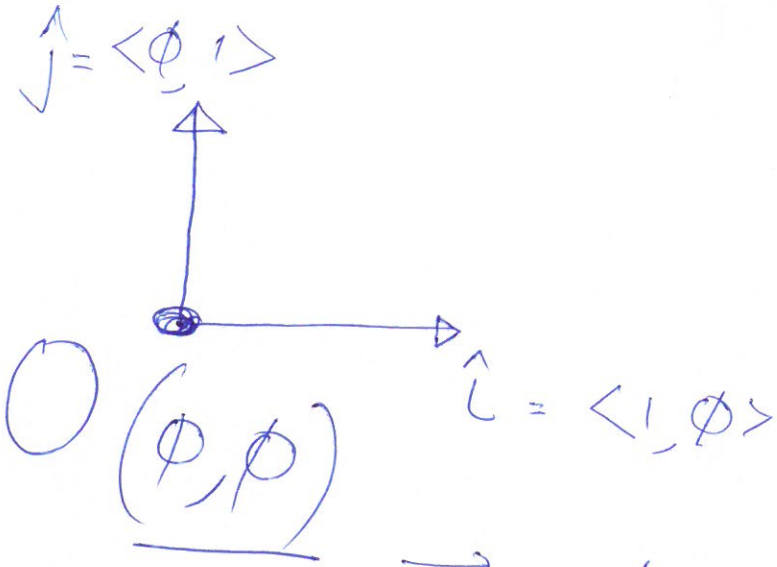
$$A(P) = A\left(P_L \hat{L} + P_J \hat{j} + O\right)$$

$$= A(P_L \hat{L}) + A(P_J \hat{j}) + A(O) \qquad [A(1\,O)]$$

$$= P_L A(\hat{L}) + P_J A(\hat{j}) + (1) A(O)$$

$$= \begin{bmatrix} A(\hat{L}) \\ A(\hat{j}) \\ A(O) \end{bmatrix} \cdot \begin{bmatrix} P_L \\ P_J \\ 1 \end{bmatrix}$$

SIDEBAR about dot products



$$\vec{u} = (u_x, u_y) \qquad \vec{u} = \begin{bmatrix} u_x \\ u_y \end{bmatrix}$$

$$\vec{v} = (v_x, v_y) \qquad \vec{v} = \begin{bmatrix} v_x \\ v_y \end{bmatrix}$$

$$\vec{u} \cdot \vec{v} = u_x v_x + u_y v_y$$

$$\vec{u}^T \cdot \vec{v}$$

$$\begin{bmatrix} u_x & u_y \end{bmatrix} \cdot \begin{bmatrix} v_x \\ v_y \end{bmatrix} = \begin{bmatrix} u_x v_x + u_y v_y \end{bmatrix}$$

$1 \times 2 \quad 2 \times 1$