① $\underline{a}(1,3,2)$ $\underline{b}(-1,2,4)$
$\underline{c}(4,1,3)$

b) $\begin{pmatrix} 3\cdot 4 - (-2)\cdot 2 \\ -2\cdot(-1) - 1\cdot(4) \\ 1\cdot 2 - 3(-1) \end{pmatrix} =$

$= \begin{pmatrix} 12+4 \\ 2-4 \\ 2+3 \end{pmatrix} = \begin{pmatrix} 16 \\ -2 \\ 5 \end{pmatrix}$

$= -1$

Coordi

① Kart

② Polar

$ii) \mathbf{a} \times \mathbf{b} =$

$iii) (\mathbf{a} + 3\mathbf{b}) \times$

$iv) proj_{\mathbf{a}} \mathbf{b}$

és a következő számokat:

$\underline{a}(a_1; a_2; a_3) \in \mathbb{R}^3 \rightarrow \underline{a} \in \mathbb{R}^n$

$\underline{b}(b_1; b_2; b_3) \in \mathbb{R}^3 \rightarrow \underline{b} \in \mathbb{R}^n$

$n \geq 2, \; n \in \mathbb{N}^+$

$$\underline{a} \cdot \underline{b} = |\underline{a}||\underline{b}| \cos \alpha$$

$$\delta_{ij} = \begin{cases} 1, & \text{if } i = j \\ 0, & \text{if } i \neq j \end{cases}$$

$\varepsilon_{ijk} =$

$\underline{a} \cdot \underline{b} = \sum_{i=1}^{3} a_i b_i \rightarrow \underline{a} \cdot \underline{b} = \sum_{i=1}^{n} a_i b_i, \; n \in \mathbb{N}^+ \setminus \{1\}$

$|\underline{a} \times$

$\underline{a}(a_1$

$\underline{a} \times \underline{b}$

$i) -2\mathbf{a}+\mathbf{b}=$

$ii) \mathbf{a}\times\mathbf{b}=$

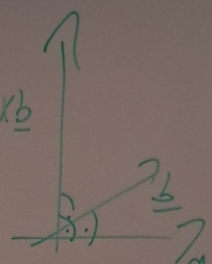
$iii) (\mathbf{a}+3\mathbf{b})\times(\mathbf{a}-\mathbf{b})=$

$iv) proj_{\mathbf{a}}\mathbf{b}$

pdf Indexes_Deriv_jegyze...

$i^n \in \mathbb{N}^+$

(b) $\underline{a} \times \underline{b}$



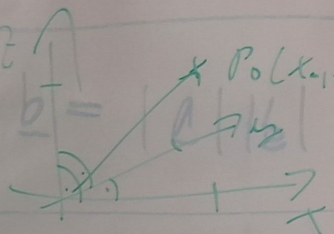
$|\underline{a}\times\underline{b}| = |\underline{a}|\cdot|\underline{b}|\cdot\sin\gamma$

$\underline{a}(a_1 ; a_2 ; a_3) \quad \underline{b}(b_1 ; b_2 ; b_3)$

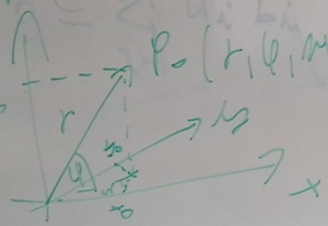
$$\underline{a}\times\underline{b} = \begin{pmatrix} a_2\cdot b_3 - a_3\cdot b_2 \\ a_3\cdot b_1 - a_1\cdot b_3 \\ a_1\cdot b_2 - a_2\cdot b_1 \end{pmatrix}$$

Coordinate systems:

① Cartesian



② Polar coordinate systems

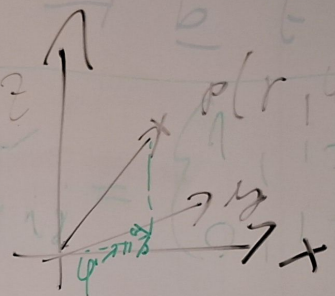


$x_0 = r \cos\varphi \cdot \cos 90°$

$y_0 = r \cos\varphi \cdot \sin 90°$

$z_0 = r \sin\varphi$

③ Cylindrical



$x_0 = r \cdot \cos\varphi$

$y_0 = r \cdot \sin\varphi$

$z_0 = z_0$

plane of the Earth's orbit around the Sun (positive
with respect to the Earth-Sun line.