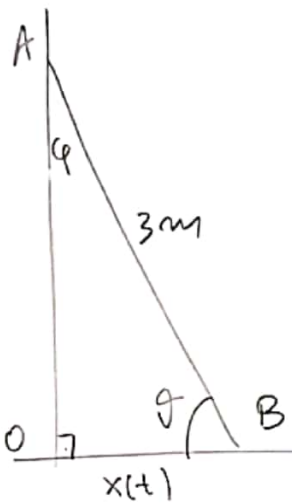


αβλ. 7 / 2.127 / 2x2.



Οριζω $x(t)$ με αναφορικά με τον B από το O.

Είμεν $x'(t) = 0,1$

Οριζω $y(t)$ με αναφορικά με τον A από το O.

$$\text{Οτι } \vartheta(t) = \frac{x(t)}{3} \Rightarrow -\sin\vartheta(t_0) \cdot \vartheta'(t_0) = \frac{x'(t_0)}{3} \Rightarrow$$

$$\vartheta'(t_0) = -\frac{x'(t_0)}{3\sin\vartheta(t_0)} \text{ (I)} = -\frac{0,1}{3 \cdot \frac{2,5}{3}} = -\frac{1}{25} = -0,04 \text{ rad/sec}$$

$$v_B = 0,1 \text{ m/s}$$

$$t_0: AO = 2,5 \text{ m}$$

$$\vartheta'(t_0) = i$$

$$v_A(t_0) = i$$

$$\sin\vartheta(t_0) = \frac{AO(t_0)}{3} = \frac{2,5}{3}$$

$$(0) \quad y(t) = \sqrt{9 - x^2(t)}$$

$$y'(t_0) = \frac{-2x(t_0) \cdot x'(t_0)}{2\sqrt{9 - x^2(t_0)}}$$

$$x(t_0) = \sqrt{9 - y^2(t_0)} = \sqrt{9 - 2,5^2} = \dots$$

Εξίσωση επιπέδου: $\varphi'(t_0) = ?$

$$\varphi(t) + \vartheta(t) = \frac{\pi}{2}$$

$$\varphi'(t) + \vartheta'(t) = 0$$

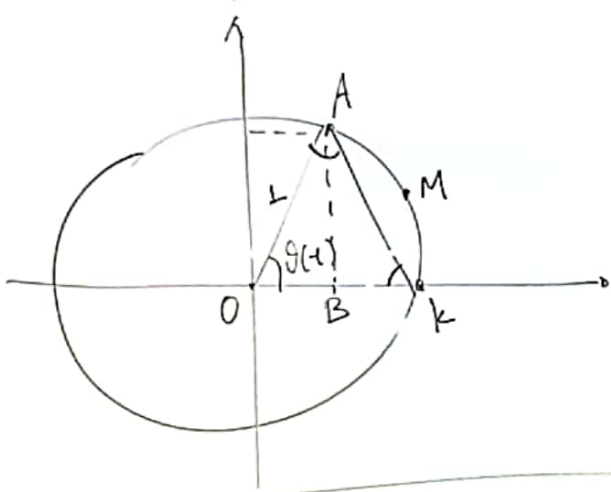
$$\varphi'(t) = -\vartheta'(t) = 0,04$$

αβλ. 8 / Σ. 127 / Σ. 128.

Έστω $M(x(t), y(t))$ το κινητό.

$$x^2 + y^2 = 1$$

$$A\left(\frac{1}{2}, \frac{\sqrt{3}}{2}\right)$$



$$y'(t) = -3 \text{ κ/s}, \quad \text{όπου } x(t_0) = \frac{1}{2}, \quad y(t_0) = \frac{\sqrt{3}}{2}$$

Ζητάω: $x'(t_0) = ?$ $y'(t_0) = ?$ $(AK)'(t_0)$

λόγια $x^2(t) + y^2(t) = 1 \Rightarrow$

$$2x(t_0) \cdot x'(t_0) + 2y(t_0) \cdot y'(t_0) = 0 \Rightarrow \frac{1}{2} \cdot x'(t_0) + \frac{\sqrt{3}}{2} \cdot (-3) = 0$$

$$x'(t_0) = 3\sqrt{3} \text{ κ/sec}$$

(β) $\mu\phi\theta(t) = \frac{y(t)}{1} \Rightarrow \omega\theta(t_0) \cdot \theta'(t_0) = y'(t_0) \leftarrow$

$\omega\theta(t_0) = \frac{x(t_0)}{1} = \frac{1}{2}$

$\frac{1}{2} \cdot \theta'(t_0) = -3 \Rightarrow \theta'(t_0) = -6$

- Κατηγορίες προβλημάτων
- αβλ 4 / Σ. 125 \leftarrow 1) κινητό σε κάθετους άξονες
 - αβλ 3,5 - Β'0M / Σ. 126 \leftarrow 2) Ομοιότητα τρίγωνων
 - αβλ 4 / Σ. 126 & 7 / Σ. 126 \leftarrow 3) Μέθοδος γωνίας
 - αβλ 9, 6 / Σ. 127 \leftarrow 4) κινητό σε καμπύλη

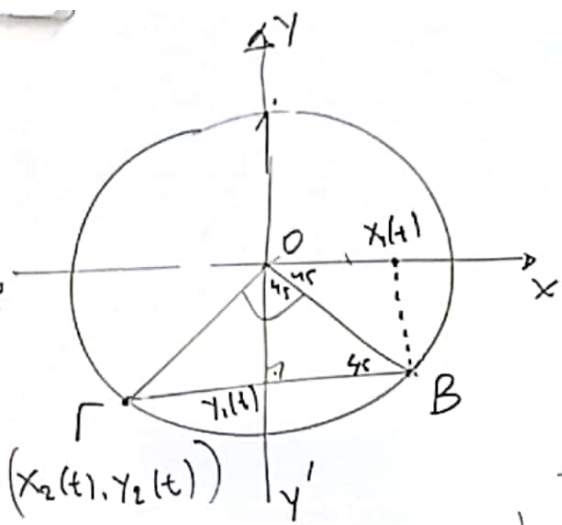
(γ) $AK^2 = OA^2 + OK^2 - 2OA \cdot OK \cdot \cos\theta(t)$

$AK^2(t) = 2 - 2 \cdot \cos\theta(t) \Rightarrow$

$2AK(t_0) \cdot (AK)'(t_0) = +2 \cdot \mu\phi\theta(t_0) \cdot \theta'(t_0)$

$(AK)'(t_0) = \frac{\sqrt{3}}{2} \cdot (-6) = -3\sqrt{3}$

$AK^2(t_0) = OA^2(t_0) + OK^2(t_0) - 2OA(t_0) \cdot OK(t_0) \cdot \cos\theta(t_0)$
 $= 1 + 1 - 2 \cdot 1 \cdot \frac{1}{2} = 1 \Rightarrow AK(t_0) = 1$



$$\begin{matrix} y_1'(t_0) \\ x_2'(t_0) \\ y_2'(t_0) \end{matrix}$$

Η εξίσωση του κύκλου: $C: x^2 + y^2 = 25$

Από εκκίνηση $\Rightarrow y_1(t) = y_2(t)$

$$x_1^2(t) + y_1^2(t) = 25 \Rightarrow \boxed{2x_1(t_0)x_1'(t_0) + 2y_1(t_0)y_1'(t_0) = 0^{(1)}}$$

Η χρονική στιγμή τα είναι όταν $\hat{\Gamma O B} = 90^\circ$

$(0, R)$, $R = 5 \text{ cm}$
 Τα $B(x_1(t), y_1(t))$
 $\Gamma(x_2(t), y_2(t))$
 $B\Gamma \parallel X'X$
 $\hat{O B \Gamma}$ είναι ορθογώνιο
 $B\Gamma, \hat{\Gamma O B}$

$$|x_1(t_0)| = |y_1(t_0)| \Rightarrow y_1(t_0) = -x_1(t_0) \Rightarrow B(x_1(t_0), -x_1(t_0))$$

$$x_1^2(t_0) + x_1^2(t_0) = 25 \Leftrightarrow 2x_1^2(t_0) = 25 \Leftrightarrow x_1^2(t_0) = \frac{25}{2} \Rightarrow$$

$$x_1(t_0) = \frac{5}{\sqrt{2}} \quad , \quad y_1(t_0) = -\frac{5}{\sqrt{2}}$$

$$(1) \Rightarrow \frac{5}{\sqrt{2}} \cdot 0,1 - \frac{5}{\sqrt{2}} \cdot y_1'(t_0) = 0 \Leftrightarrow y_1'(t_0) = 0,1 \text{ cm/sec}$$

$$\Gamma(-x_1(t), y_1(t)) = (-x_1(t), -x_1(t)) \quad , \quad x_2(t) = -x_1(t) \Rightarrow x_2'(t_0) = -x_1'(t_0) = -0,1 \text{ cm/sec}$$

$$y_2(t) = -x_1(t) \Rightarrow y_2'(t_0) = -x_1'(t_0) = -0,1 \text{ cm/sec}$$

$$\begin{matrix} B(x_1(t), -x_1(t)) \\ \Gamma(-x_1(t), -x_1(t)) \end{matrix} \quad | \quad (B\Gamma) = 2x_1(t) \dots$$

$$\hat{\Gamma O B} : \begin{matrix} B\Gamma^2 = OB^2 + O\Gamma^2 - 2OB \cdot O\Gamma \cdot \cos(\hat{\Gamma O B}) \\ B\Gamma^2 = 2 - 2\cos\phi(t) \end{matrix} \quad \left. \begin{matrix} \\ \\ \end{matrix} \right\} d^2(t) = 2 - 2\cos\phi(t)$$

οπότε $(B\Gamma) = d$