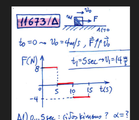
A4

1ο ΓΕΛ ΣΑΛΑΜΙΝΑΣ

15-1-2025

11673/Β

$v_0 = 0 \rightarrow v_0 = 4\,m/s$, $\beta\eta\tau\alpha\ \ \Delta x_{\Sigma\upsilon\nu o\lambda}$



Δ1) 0...5sec : ευθύγραμμη ? α=?

Δ2) m=?

Δ3) γραφ. υ-t (0...15 sec)

Δ4) $V_{\Sigma\varphi} = ?$ (0...15 sec)

Δ1 $F = 8N = \text{σταθ.} \Rightarrow \alpha = \frac{F}{m} = \frac{8}{m}$?

⇓

$\alpha = \text{σταθ.}$

⇓

ΕΟΕΚ με v_0

$v_1 = v_0 + \alpha t_1 \Rightarrow 14 = 4 + \alpha \cdot 5 \Rightarrow 14 - 4 = \alpha \cdot 5 \Rightarrow$

$\Rightarrow 10 = \alpha \cdot 5 \Rightarrow \boxed{\alpha = 2\,m/s^2}$

Εναλλ.: κτο

⇓

$\Sigma F = F$

⇓

$\Sigma F = m\alpha$

Δ2 $F = m\alpha \rightarrow 8 = m \cdot 2 \Rightarrow \boxed{m = 4\,kg}$

Δ3 $t = 0 \rightarrow v_0 = 4\,m/s$

$t_1 = 5s \rightarrow v_1 = 14\,m/s$

$t_2 = 10 \rightarrow v_2 = 14\,m/s$

μετά $t = 5 \ldots 10\,sec \Rightarrow F = 0 \Rightarrow \alpha = 0 \Rightarrow$ ΕΟΚ

$t = 10 \ldots 15\,sec$: $F = -4N < 0 \Rightarrow \alpha_3 = \frac{F}{m} = \frac{-4}{4} \Rightarrow \boxed{\alpha_3 = -1\,m/s^2}$

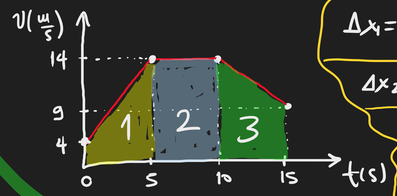
επιβραδύνση

η κίνηση θα είναι ΕΟΕΒΚ με αρχικό ταχύτητα ίσης $v_2 = 14\,m/s$ και επιβράδυνση μέτρου $|\alpha_3| = 1\,m/s^2$

$v = v_0 - |\alpha| \cdot t$

$\Delta t = 15 - 10 = 5\,sec$

$\therefore\ v_3 = v_2 - |\alpha_3| \cdot \Delta t = 14 - 1 \cdot 5 = 14 - 5 \Rightarrow \underline{v_3 = 9\,m/s}$



$\Delta x_1 = \frac{(b+B)y}{2} = \frac{(4+14) \cdot 5}{2} = 45\,m$

$\Delta x_2 = b \cdot y = 5 \cdot 14 = 70\,m$

$\Delta x_3 = \frac{(b+B)y}{2} = \frac{(9+14) \cdot 5}{2} = 57{,}5\,m$

$\Delta x_{o\lambda} = 45 + 70 + 57{,}5 = 172{,}5\,m$

8018/Β2

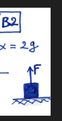
$v_0 = 0 / \alpha = 2g$

$B = ?$

A. F

B. F/3

Γ. 3F



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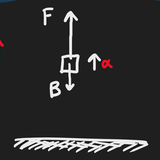


$\Sigma F = m\alpha$

$F - B = m \cdot \alpha$

$F - B = m \cdot 2g$ → B

$B = mg$

$F - B = 2B$

$F = B + 2B$

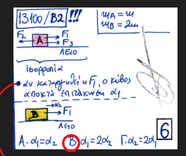
$F = 3B$

$\boxed{B = \frac{F}{3}}$ → B

13100/Β2 !!!

$m_A = m$

$m_B = 2m$



Ισορροπία

• αν καταφέρουμε ν F_1 ο κύβος αρχίζει ν' επιταχύνει α_1

$A \cdot \alpha_1 = \alpha_2$ B. $\alpha_1 = 2\alpha_2$ Γ. $\alpha_2 = 2\alpha_1$

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→ το σύστημα θα κινηθεί προς τα δεξιά

αρχικά: Σύστημα A : ισορροπία

$\Sigma F_A = 0 \Rightarrow \boxed{F_2 = F_1 + F_3}$ (1)

τελικά: Σύστημα A: κίνηση με F_2, F_3

$\Sigma F_A = m_A \cdot \alpha_1 \Rightarrow \boxed{F_2 - F_3 = m \cdot \alpha_1}$ (2)

Σύστημα B: $\Sigma F_B = m_B \cdot \alpha_2 \Rightarrow \boxed{F_1 = 2m \cdot \alpha_2}$ (3)

(1): $F_1 = F_2 - F_3 \xrightarrow{(2)} \boxed{F_1 = m \cdot \alpha_1}$ (4)

(3)/(4) : $2\cancel{m} \cdot \alpha_2 = \cancel{m} \cdot \alpha_1 \Rightarrow \boxed{\alpha_1 = 2\alpha_2}$

⇓

B.