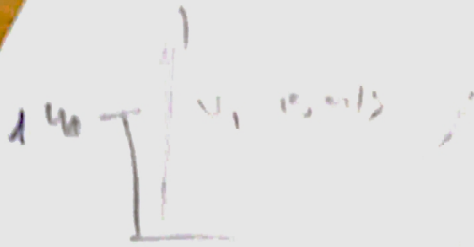


Izena Gorka Arandia

arhoa Fisika

ikasmaita Pate 1

data 21/12/27 24/12/27



$$S = -\frac{1}{2} \cdot 10 \cdot t^2 + v_0 \cdot t$$

$$v = -10t + v_0$$

$$t = \frac{-15 \pm \sqrt{15^2 + 800}}{10} = 1.7 \text{ s}$$

$$\begin{cases} -5t^2 + v_0 t = 40 \\ -\frac{1}{2} 10t + v_0 = 15 \rightarrow v_0 (15 + 10t) \end{cases}$$

$$-5t^2 + (15 + 10t) \cdot t = 40$$

$$-5t^2 + 15t + 10t^2 = 40$$

$$5t^2 + 15t - 40 = 0$$

$$v_0 = (15 + 10 \cdot 1.7) = 32.01 \text{ m/s}$$

Hmax  $\rightarrow v = 0$

$$0 = -10t + v_0 \rightarrow 10t = 32.01$$

$$t = \frac{32.01}{10} = 3.2 \text{ s} \rightarrow 5(3.2) = 16 \text{ m}$$

Altura maxima

Horizontalen

$$2) \begin{cases} v \cdot \cos 15 \cdot t = 100 \rightarrow v = \frac{100}{\cos 15 t} \\ -5t^2 + v t \sin 15 = 0 \end{cases}$$

$$-5t^2 + \left( \frac{100}{\cos 15 t} \right) \cdot \sin 15 = 0$$

$$-500t^2 + \cos 15 t^2 \cdot \sin 15 = 0$$

$$t = 0 \quad -500t^2 + t^2 \cdot \cos 15 \sin 15 = 0$$

$$499t^2 \cdot \cos 15 \cdot \sin 15 = 0$$

$$t \cdot v \cdot \cos 15 = 100$$

$$\frac{1}{2} \cdot (-10) \cdot t^2 + v \sin 15 \cdot t + 50 = 0$$

$$-5t^2 + v \sin 15 t = 0$$

$$-5t^2 + \frac{100}{t \cdot \cos 15} \cdot \sin 15 = 0$$

$$-5t^2 + \frac{100 \tan 15}{t} = 0$$

$$t = 0$$

$$t = \frac{0 \pm \sqrt{0 + 20 \cdot \tan 15}}{10} = 53.58$$

c))

Horizontalen

$$v_x = v \cdot \cos 15$$

$$v_y = v \cdot \sin 15$$

$$0 = -5t^2 + 10 \cdot t \cdot \sin 15 \quad t = 2.34 \text{ s}$$

$$5) \quad 2400 \cdot \frac{2\pi}{1} \cdot \frac{1 \text{ m} \cdot \text{s}}{60} = \frac{2400 \cdot 2\pi}{60} = 80\pi \text{ rad/s}$$

$$\omega_1 = 0 \text{ rad/s}$$

$$a) \quad \alpha = \frac{\Delta\omega}{\Delta t} = \frac{-80\pi \text{ rad}}{20} = -4\pi \text{ rad/s}^2$$

$$b) \quad s = -\frac{1}{2} a t^2 + \omega_1 t + s_0$$

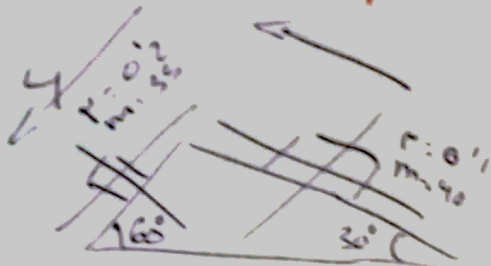
$$s = -\frac{1}{2} \cdot 2\pi \cdot 20^2 + 80\pi \text{ rad} \cdot 20 = 800\pi \text{ rad} \rightarrow \left( \text{bisa } \frac{2\pi \text{ rad}}{2\pi} \right)$$

$$c) \quad a = \alpha \cdot r = -4\pi \text{ rad} \cdot 0.06 = -0.75 \text{ m/s}^2$$

$$a = \omega^2 \cdot r = 35.53 \text{ m/s}^2$$

$$\omega(t) = -4\pi \cdot 10 + 80\pi = 60\pi \text{ rad/s}$$

$$a = \sqrt{a_T^2 + a_N^2}$$



→ kutaa

$$P_x = 635 \sin 60 = 303.1 \text{ N}$$

$$P_y = 10 \cdot 35 \cos 60 = 175 \text{ N}$$

Karua

$$P_x = 6 \cdot 40 \cdot \sin 30 = 200 \text{ N}$$

$$P_y = 10 \cdot 40 \cdot \cos 30 = 346.4 \text{ N}$$

$$P_x \text{ kutaa} > P_x \text{ karua}$$

$$F = m \cdot a$$

$$P_x(\text{kutaa}) - F_r - P_x(\text{karua}) = m_r \cdot a$$

$$350 \sin 60 - (400 \cdot \sin 30 + 400 \cos 30 \cdot 0.2) = \frac{P_x - F_r - P_{x2} - F_{r2}}{35 + 40} = a$$

75

$$0.44 \text{ m/s}^2$$

$$F = m \cdot a$$

$$P_x - F_r - T = m \cdot a$$

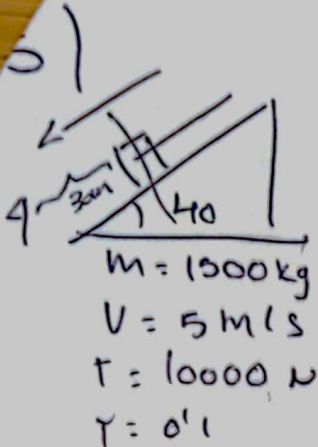
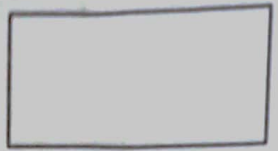
$$350 \sin 60 - 350 \cos 60 \cdot 0.2 - T = 35 \cdot 0.44$$

$$350 \sin 60 - 350 \cos 60 \cdot 0.2 = 35 \cdot 0.44 + T$$

$$350 \sin 60 - 350 \cos 60 \cdot 0.2 - 35 \cdot 0.44 = T$$

$$252.7 = T$$





izena Geika Alondra

arloa fi sika

ikasmaila Bete 1

data 24/12/02

$$P_x = 15 \cdot 10^3 \cdot \sin 40 = 9641.8 \text{ N}$$

$$P_y = 15 \cdot 10^3 \cdot \cos 40 = 11490.6 \text{ N}$$

$$F_r = (15 \cdot 10^3 \cdot \cos 40) \cdot 0.1 = 1149 \text{ N}$$

$$F = m \cdot a$$

Tensiona 10000  
Dereen

$$P_x - (F_r + T) = m \cdot a$$

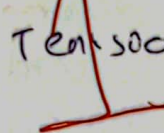
$$\frac{P_x - (F_r + T)}{m} = a$$

$$15 \cdot 10^3 \sin 40 - (1149 + 10000)$$

$$\frac{1500}{11}$$

$$v = a \cdot t + v_0$$

$$v = -1.3 + 5 = 2 \text{ m/s}$$



$$a = \frac{15 \cdot 10^3 \cdot \sin 40 - (1149 + 10000)}{1500}$$

$$-0.11 \text{ m/s}^2$$

$$0 = -0.11 \cdot t + 2$$

$$0.11t = 2$$

$$t = \frac{2}{0.11} = 20 \text{ s}$$

beher ditu  
gel ditzeko

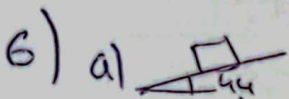
$$s = \frac{1}{2} a t^2 + v_0 t$$

$$s = -0.05 \cdot 20^2 + 2 \cdot 20 = 20 \text{ m}$$

egiten ditu.

$$s_0 = 0.15 \cdot 3^2 + 5 \cdot 3 - 30$$

$$-5.3$$



$$F_r = \mu \cdot N = 0.25$$

$$P_x = 50 \cdot \sin 20 = 17.1$$

$$P_y = 47 \text{ N}$$

$$F_r = 47 \cdot 0.25 = 11.75 \text{ N}$$

$$s = \frac{1}{2} a t^2 + (v_0 \cdot t)$$

$$2.5 = \frac{a}{2} \cdot t^2$$

$$\frac{2.5 \cdot 2}{\frac{a}{2}} = t^2$$

$$t = 1.6 \text{ s}$$

eginduko

$$F = m \cdot a$$

$$P_x - F_r - F = m \cdot a$$

$$\frac{P_x - (F_r + F)}{m} = a$$

$$0.47 \text{ m/s}^2$$

$$7) \quad \vec{I} = \vec{F} \cdot \Delta t \rightarrow \vec{I} = \Delta \vec{P} = \vec{P}_1 - \vec{P}_0$$

$$P = m \cdot v \rightarrow P_0 = 0,06 \cdot 30 = 1,8 \text{ kg} \cdot \text{m/s}$$

$$\hookrightarrow P_1 = 0,06 \cdot (-40) = -2,4 \text{ kg} \cdot \text{m/s}$$

$$a_1) \quad I = \Delta P = -2,4 - 1,8 = -4,2 \text{ kg} \cdot \text{m/s}$$

$$a_2) \quad \vec{I} = \vec{F} \cdot \Delta t \rightarrow \vec{F} = \frac{\vec{I}}{\Delta t} = \left| -\frac{4,2}{0,005} \right| = 840 \text{ N}$$

$$b) \quad m_1 \cdot v_{1i} + m_2 \cdot v_{2i} = m_1 \cdot v_{1f} + m_2 \cdot v_{2f}$$

$$0,125 \cdot 2 + 1 \cdot 0 = 0,125 \cdot (-1,5) + 1 \cdot v_2$$

$$0,25 = 0,1875 + v_2$$

$$0,25 - 0,1875 = v_2 \rightarrow v_2 = 0,0625 \text{ m/s}$$

8) Radian: Zirkulerentzietan erabiltzen den unitate angeluarra, hau zirkulerentzieren erradiao, bere gainazalean sartzen duen proiektzioa da, eta ~~angelu~~ graduko esberta zirkulerentzia bakoitzarentzat eraberrina da.

Alektzioaren osagai normala, osagai tangentialarekiko perpendikulara da, eta hau azelerazioa ikarabide aldeketa emateaz erabiltzen da.

Momento lineala, masa eragindak diren arteko biderkadura da, ~~h~~ sistema batean masa konstantea bada eta karga indarrik ~~ez~~ badago, hau mantenduko da.

$$\vec{F} = \frac{d\vec{P}}{dt} \approx \frac{\Delta \vec{P}}{\Delta t}; \quad \vec{F} = 0 \rightarrow \Delta \vec{P} = \vec{F} \cdot \Delta t = 0 \cdot \Delta t = 0 = \vec{P}$$

9) a) Momentu horietan, gure pixua beruntze egiten du elako eta igogailua gertu, hau personek eta zoruaren arteko ~~h~~ indar normala eragotzen du, baskula pixu handiagoa markatuz.