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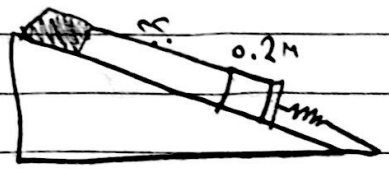
level 1

ID: 2024170012

Date						
Class						
Period						

Subject Matter Assignment physics 1

1) F → M → $W = \vec{F} \cdot \vec{S} = (12 \times 6) + (0 \times -8) = +72\ J$

2) 

$* W_T = \frac{1}{2} k l^2 s = \frac{1}{2} \times 200 \times (0.2)^2$

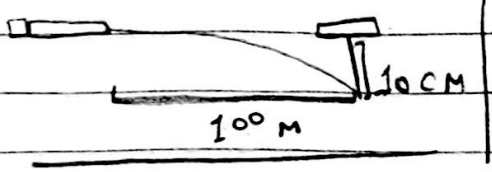
$= 4 \rightarrow 2)$

$* W_g = mgS \times \sin 37 \rightarrow 1)$

From 1.2 $\therefore W_T = W_g = W_s$

$\therefore 1 \times 9.8 \times S \times \sin 37 = \frac{1}{2} \times 200 \times (0.2)^2$

$S = 0.68\ m$

3) 

القانون الثاني $\rightarrow y = V_{iy} t + \frac{1}{2} g t^2$

$0.1 = 0 + \frac{1}{2} \times 9.8 \times t^2$

$** t = \frac{1}{7}$

القانون السرعة $\rightarrow X = V_i \times t$

$100 = V_i \times \frac{1}{7}$

$\therefore V_{ix} = 700\ m/s$

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4) * 20 kg

* $k = 8000$

* $x_i = 0.1$

* $x_f = 0.08$

* $U_{s1} = \frac{1}{2} k x_i^2 = \frac{1}{2} \times 8000 \times (0.1)^2$

$= 40$

* $U_{s2} = \frac{1}{2} k x (x_f)^2 = \frac{1}{2} \times 8000 \times (0.08)^2$

$= 25.6$

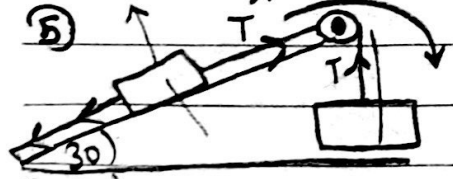
* $\Delta U_s = 25.6 - 40 = -14.4 J$ ⟶ 1)

* $k_f = 130 - 0 = 13$ ⟶ 2)

$-k_i$

$W_f = \Delta KE + \Delta U_s = -1.4 J$

5)



$M \times \sin 30$

$M_1 a = Mg - T$

$M_1 a = T - Mg(\sin 30) - \mu Mg \cos 30)$

$2M_1 a = Mg - Mg(\sin 30) - \mu Mg(\cos 30)$

$2a = 9.8 - \frac{1}{2} 9.8 - (0.31 \times 9.8 \times \frac{\sqrt{3}}{2})$

$a = 1.13$

القانون الثالث ⟵ $V_f^2 = V_i^2 + 2ar$

$V_f = \sqrt{2 \times 1.13 \times 1.6} = 1.8$

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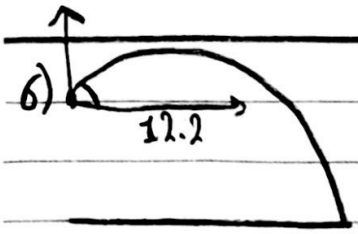
6) 

$*V_x = 12.2 \times \cos 53°$

$*V_y = 12.2 \times \sin 53°$

$* x = 25 \quad * y = ??$

$* x = V_{ix} t \longrightarrow t = 3.4$

$* y = V_{iy} t + \frac{1}{2} g t^2$

$y = (12.2 \times \sin 53) \times 3.4 + \left(\frac{-1}{2} \times 9.8 \times (3.4)^2\right)$

$= -23.51$

$h = |y| = 23.51 = 23.6 \text{ m}$

7) $V = \frac{2\pi r}{T} = \frac{2\pi \times 10}{10} = 2\pi$

$F_g = mg = 50 \times 9.8 = 490 \text{ N}$

$F_c = \frac{mv^2}{r} = \frac{50 \times 4\pi^2}{10} = 197.2 \text{ N}$

$* F_N = F_g - F_c = 490 - 197.2 = 292.8$

$** F_N = 0.29 \text{ kN}$

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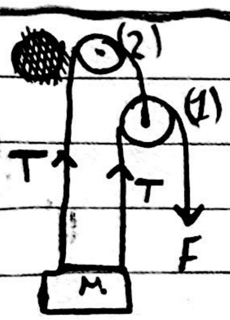
8) $-\mu g = Ma \longrightarrow 0.1$ معامل الاحتكاك

$\times M$

9)



$* \; F = T$

$* \; (1) = (2)$

$T' = T + F$

$*** \; T' = F + F = 2 \times 15 = 30$

$\therefore M = \frac{T' + F}{g} = \frac{45}{9.8} = 4.6$

10) $a_{c_1} = \frac{V_1^2}{r} = \frac{(150)^2}{500} = 45$

$a_{C_2} = \frac{V_2^2}{r} = \frac{(300)^2}{500} = 180$

$\therefore \text{Factor} = \frac{a_{C_2}}{a_{C_1}} = 4$