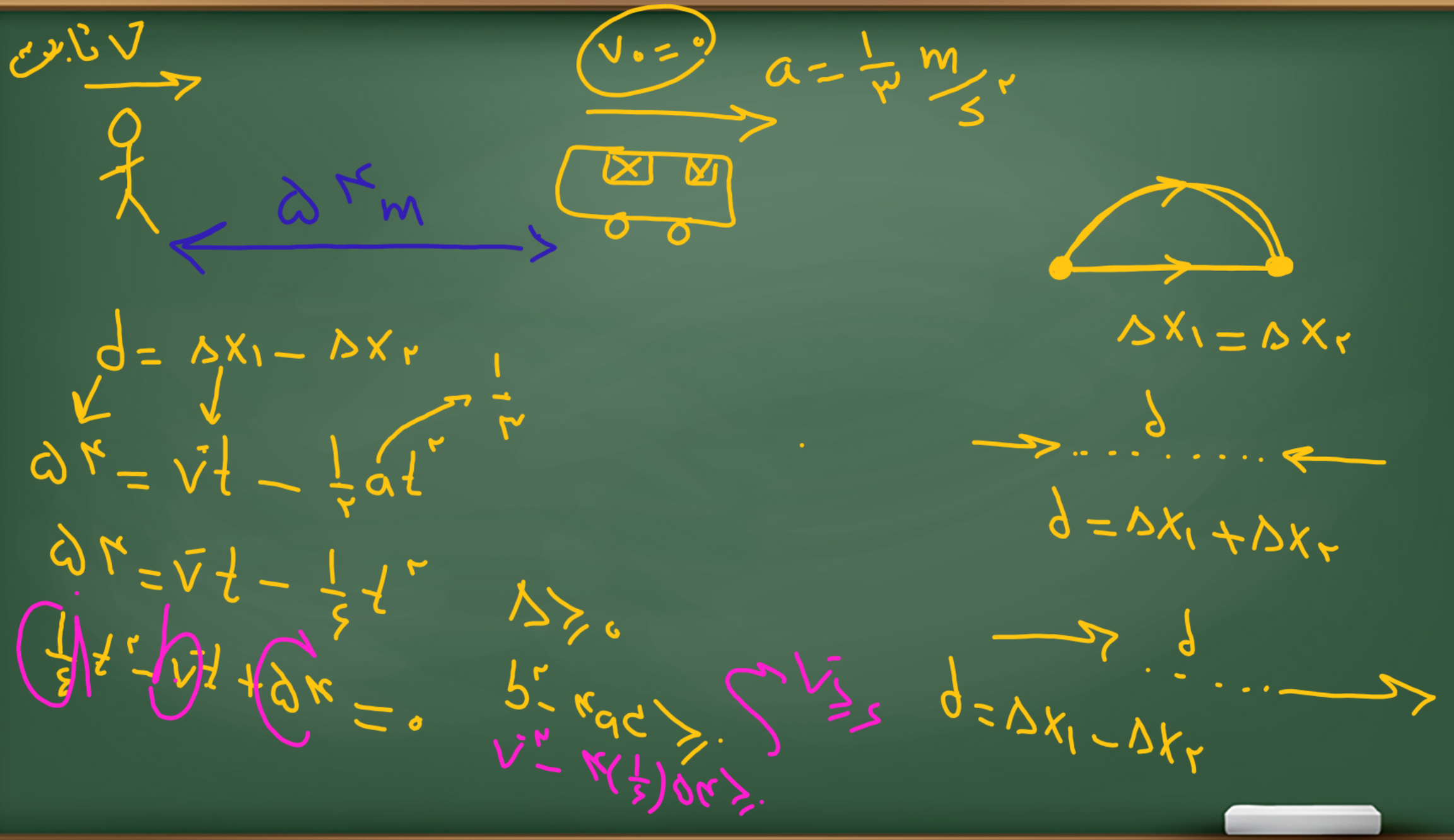
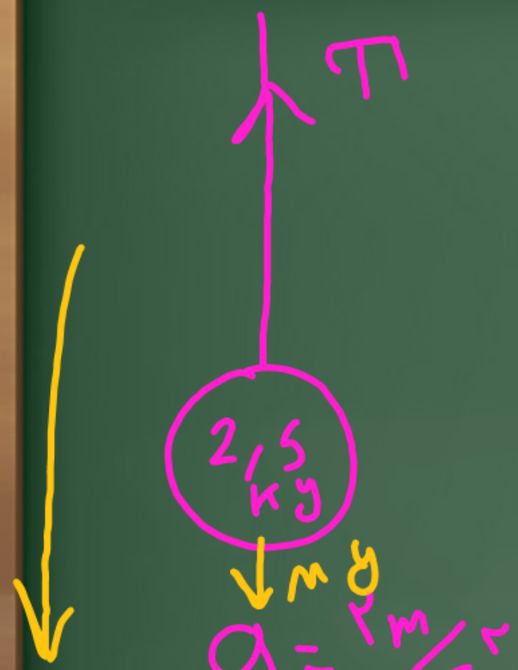

با سرعت V
۲۵ m
$v_0 = 0$
$a = \frac{1}{3}\ m/s^2$
$\Delta x_1 = \Delta x_2$
$d = \Delta x_1 - \Delta x_2$
$\Delta x_2 = vt - \frac{1}{2}at^2$
$\Delta x_2 = \bar{v}t - \frac{1}{2}t^2$
$\frac{1}{4}t^2 - vt + \Delta x = 0$
$\Delta \geq 0$
$b^2 - 4ac \geq 0$
$v^2 - 4(\frac{1}{4})(\Delta x) \geq 0$
$v \geq 5$
$d = \Delta x_1 + \Delta x_2$
$d = \Delta x_1 - \Delta x_2$



$$T = m(g \pm a)$$

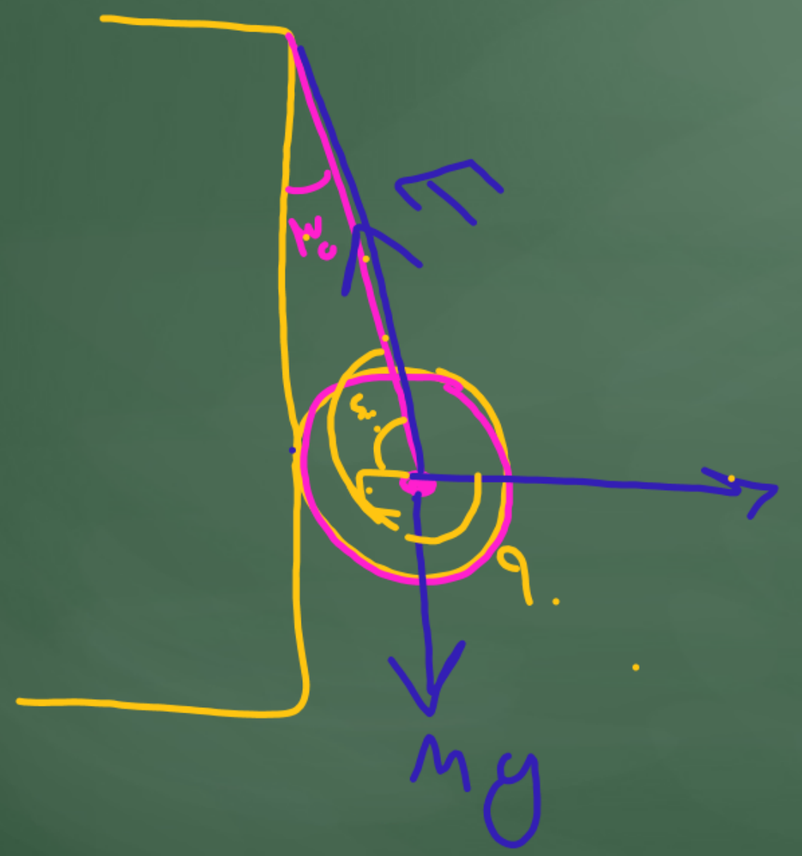
$$T = 2{,}5(10 + 2) = 30$$

قانون $F = ma$

$$mg - T = ma \quad (+\downarrow)$$

$$25 - T = 2{,}5(-2)$$

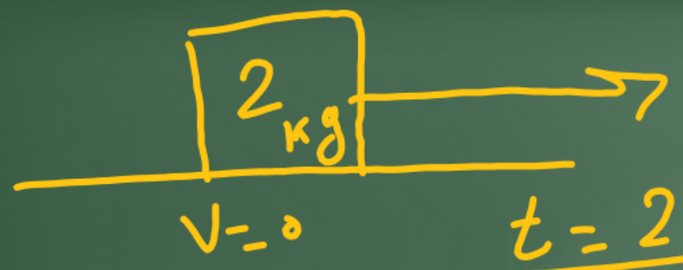
$$T = 30$$



$$\frac{T}{\sin 90^\circ} = \frac{N}{\sin(30^\circ + 90^\circ)}$$

$$\frac{T}{1} = \frac{N}{\cos 30^\circ}$$

$$\frac{N}{\pi} \cdot \cos 30^\circ = \frac{1}{2}$$



$\mu_k = 0.2$

$F_{\text{خالص}} = ma$

$۲۴ - ۲\mu_k mg = ma$

$۲۴ - (0.2)(20) = 2a$

$a_1 = 10$

$V = at + V_0 \Rightarrow V = 10(2) + 0 = 20$

$\Delta x = \frac{V_1 + V_2}{2} t = \frac{0 + 20}{2} 2 = 20$

$0 - \mu_k mg = ma$

$a = -2$

$V^2 - V_0^2 = 2a\Delta x$

$0 - 400 = 2(-2)\Delta x \rightarrow \Delta x = 100$

$\Delta x_{\text{کل}} = 100 + 20 = 120$

$R = 2m \rightarrow I = 0.96 \frac{kg}{m^2}$

$R = 1 \Longrightarrow \beta = ?$

$\frac{I_2}{I_1} = \left(\frac{R_2}{R_1}\right)^2 \quad R \to 1$

$I_2 = 3.14 \ kg/m^2$

$I_0 = 10^{-6} \frac{kg}{m^2}$

$\log 3 = 0.47$

$\log 2 = 0.3$

$\beta = 10 \log \frac{I}{I_0}$

$I_0 \to I = 6 \frac{kg}{m^2}$

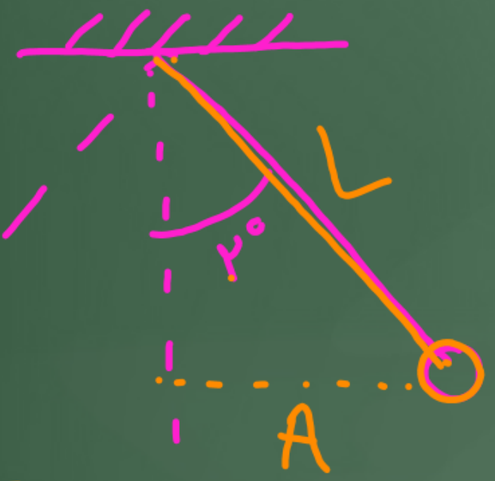
$\beta = 10 \log 3^8 \times 2^6$

$10 (\log 3^8 + \log 2^6)$

$8 \log 3 \times 6 \log 2$

$8 \log 3 \otimes 36$

64.7



$$T = 2\pi\sqrt{\frac{L}{g}}$$

$$l = \frac{L}{10}$$

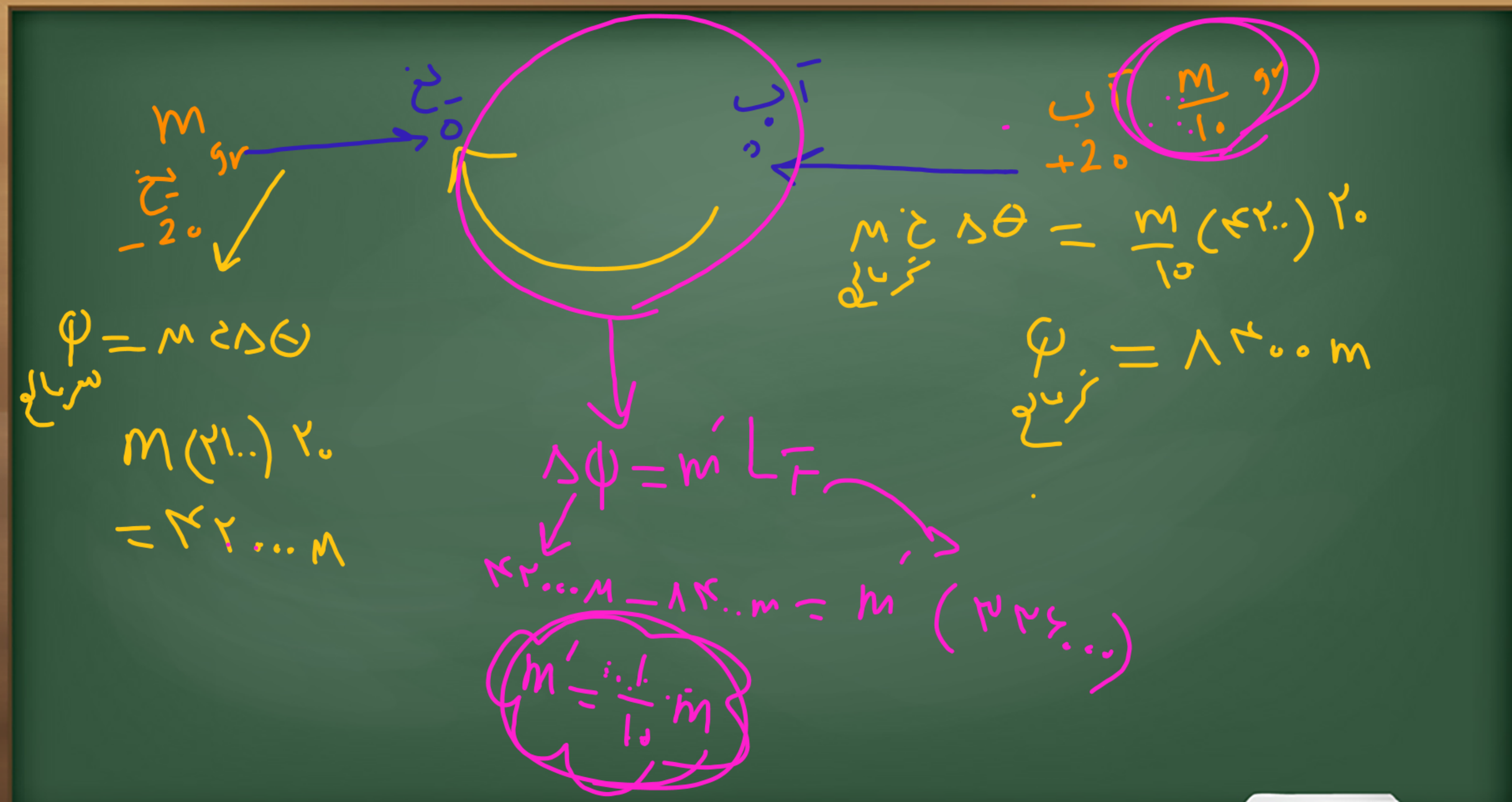
$$L = \frac{1}{4}m = 25\,cm$$

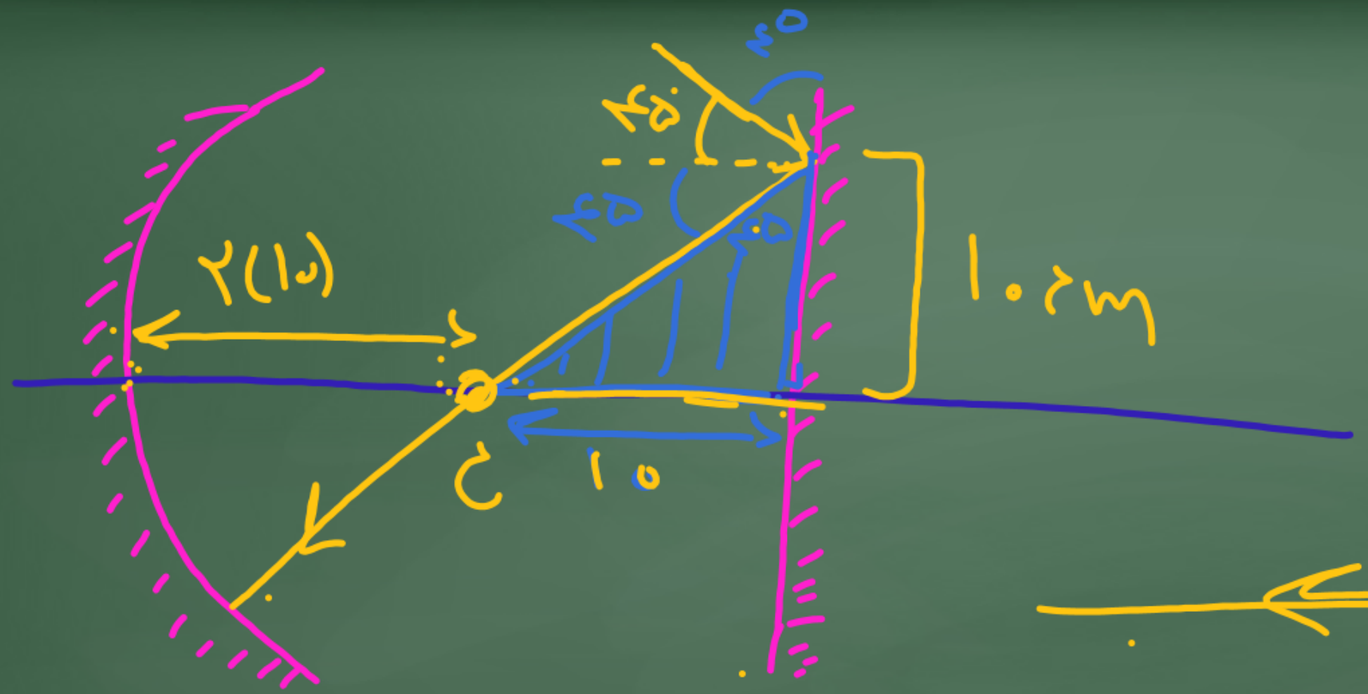
$$L = 20\,cm$$

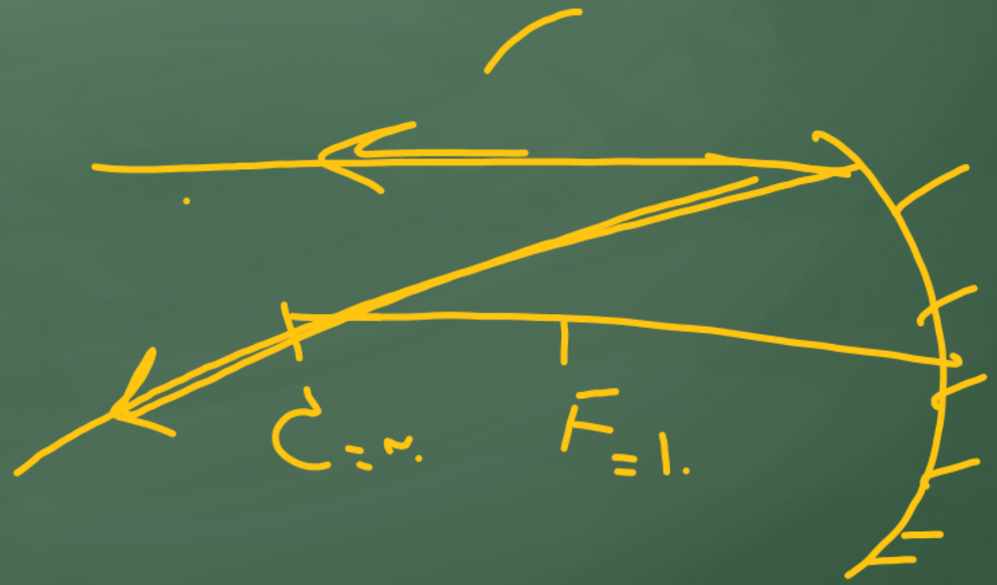
$$\sin\theta = \frac{A}{L}$$

$$L \rightarrow 20$$

$$A = \frac{\theta\pi}{180}$$


m
ج۰
ج-۲۰
آ
ب
د
ب
+۲۰
m/۱۰
ج۲
φ = ۸۴۵۵ m
سریع
m (۲۱۰۰) ۲۰
= ۴۲۰۰۰ m
m ج ۵۵ = m/۱۵ (۴۲۰۰) ۲۰
کریع
φ = ۸۴۰۰ m
کریع
۵φ = m' L۲
۴۲۰۰۰ m - ۸۴۰۰ m = m' (۳۴۲۰۰)
m' = ۱/۱۰ m





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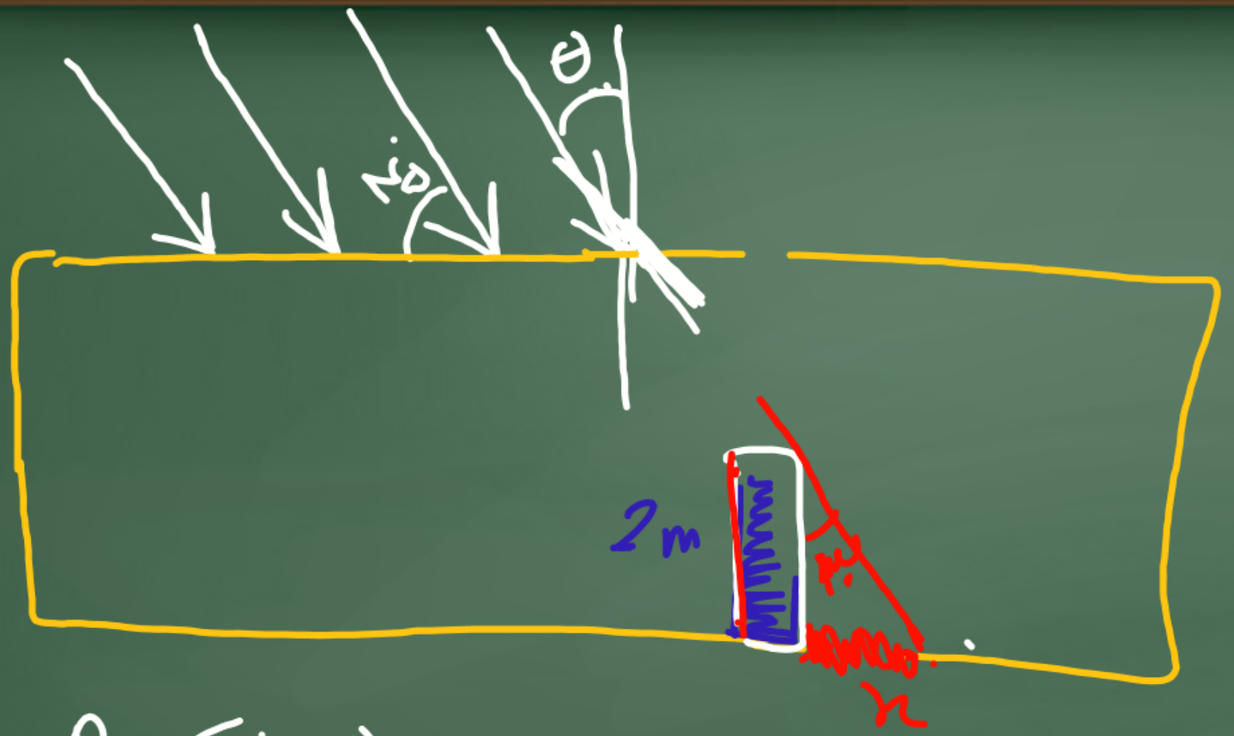


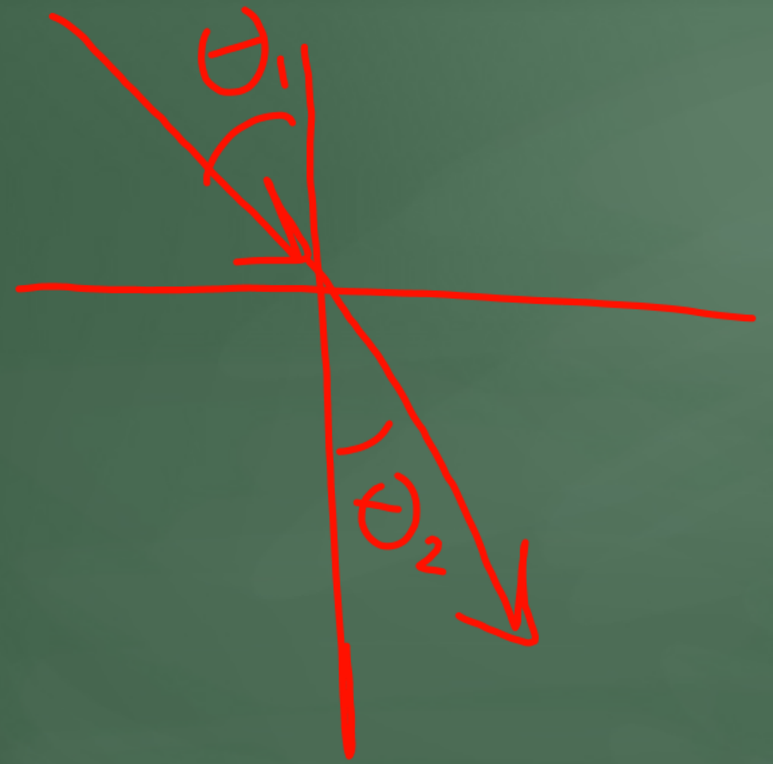
$$\tan 30^\circ = \frac{x}{2}$$

$$x = 2\sqrt{\frac{3}{2}}$$

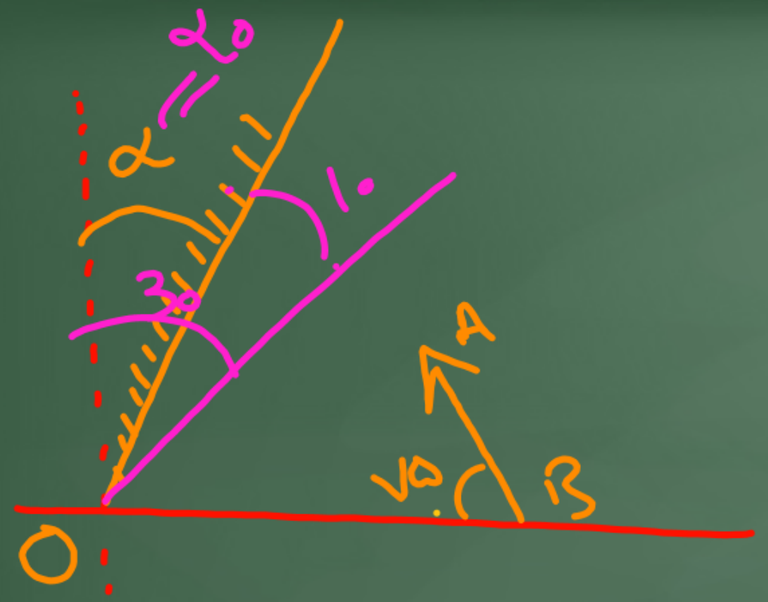
$$n_1 \sin\theta_1 = n_2 \sin\theta_2$$

(1) $\frac{1}{2} = \frac{\sqrt{2}}{2}\sin\alpha$

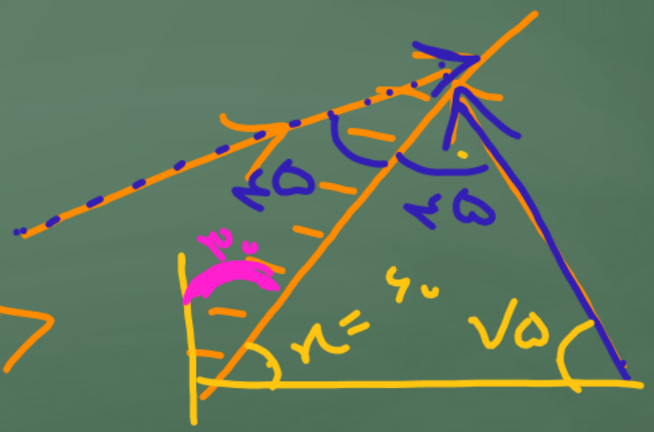
$\sin\theta = \frac{1}{\sqrt{2}}$ $\quad \theta = 45^\circ$



$$\begin{cases} n_1 \sin\theta_1 = n_2 \sin\theta_2 \\ n_1 v_1 = n_2 v_2 \\ n_1 \lambda_1 = n_2 \lambda_2 \\ v_2 \sin\theta_1 = v_1 \sin\theta_2 \end{cases}$$



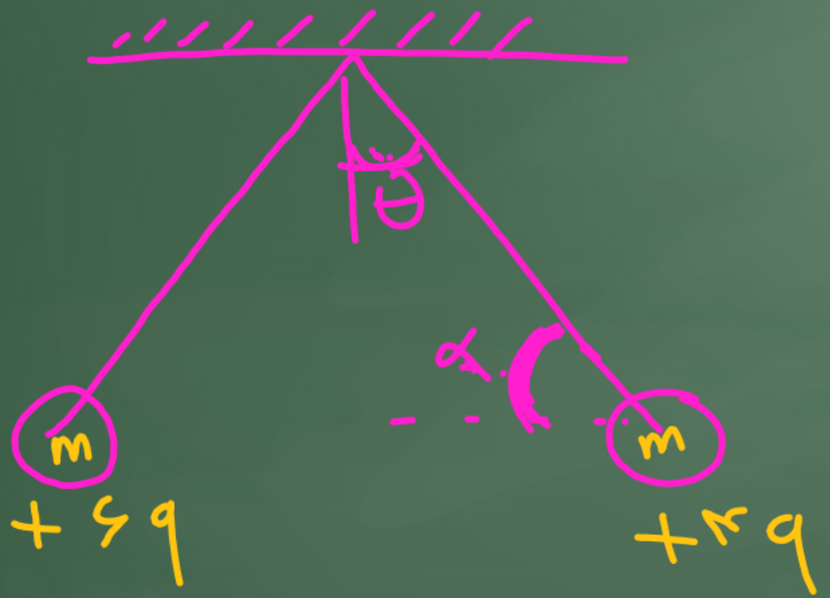
$\Rightarrow$



$x + 75 + 25 = 180$

$x = 40$

$x = 20$



(2) $mg\cos\alpha$

(1) $mg\sin\alpha$

(3) $mg\cot\alpha$ ✓

(4) $mg\tan\alpha$

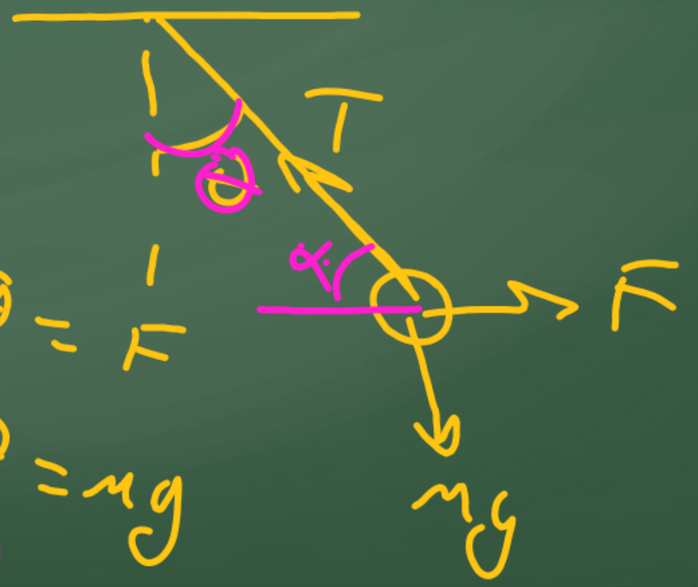
$T\sin\theta = F$

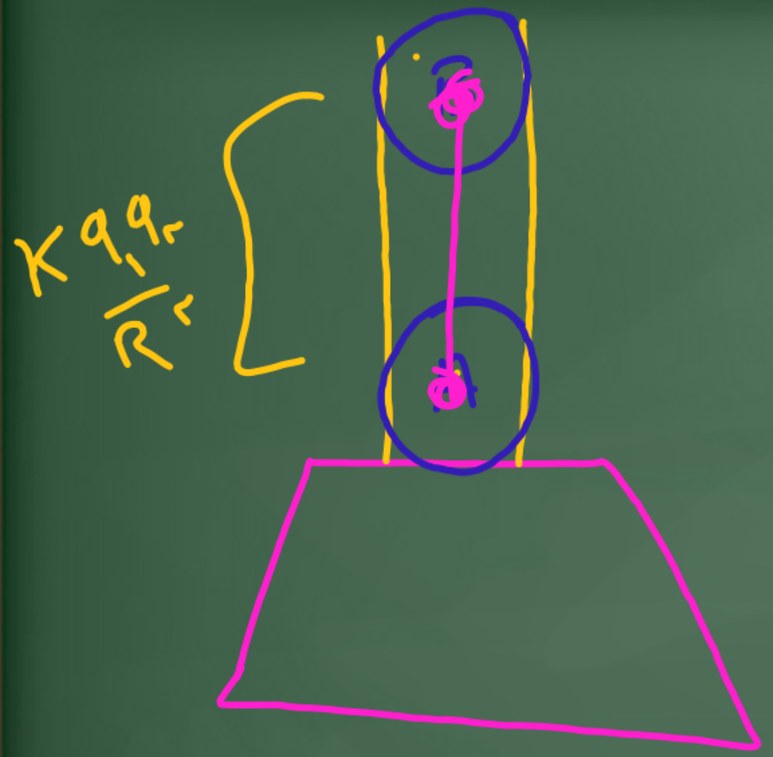
$T\cos\theta = mg$

$\tan\theta = \frac{F}{mg}$

$F = mg\tan\theta$

$F = mg\cot\alpha$





وزن $= 4 \times 10^{-3} N$

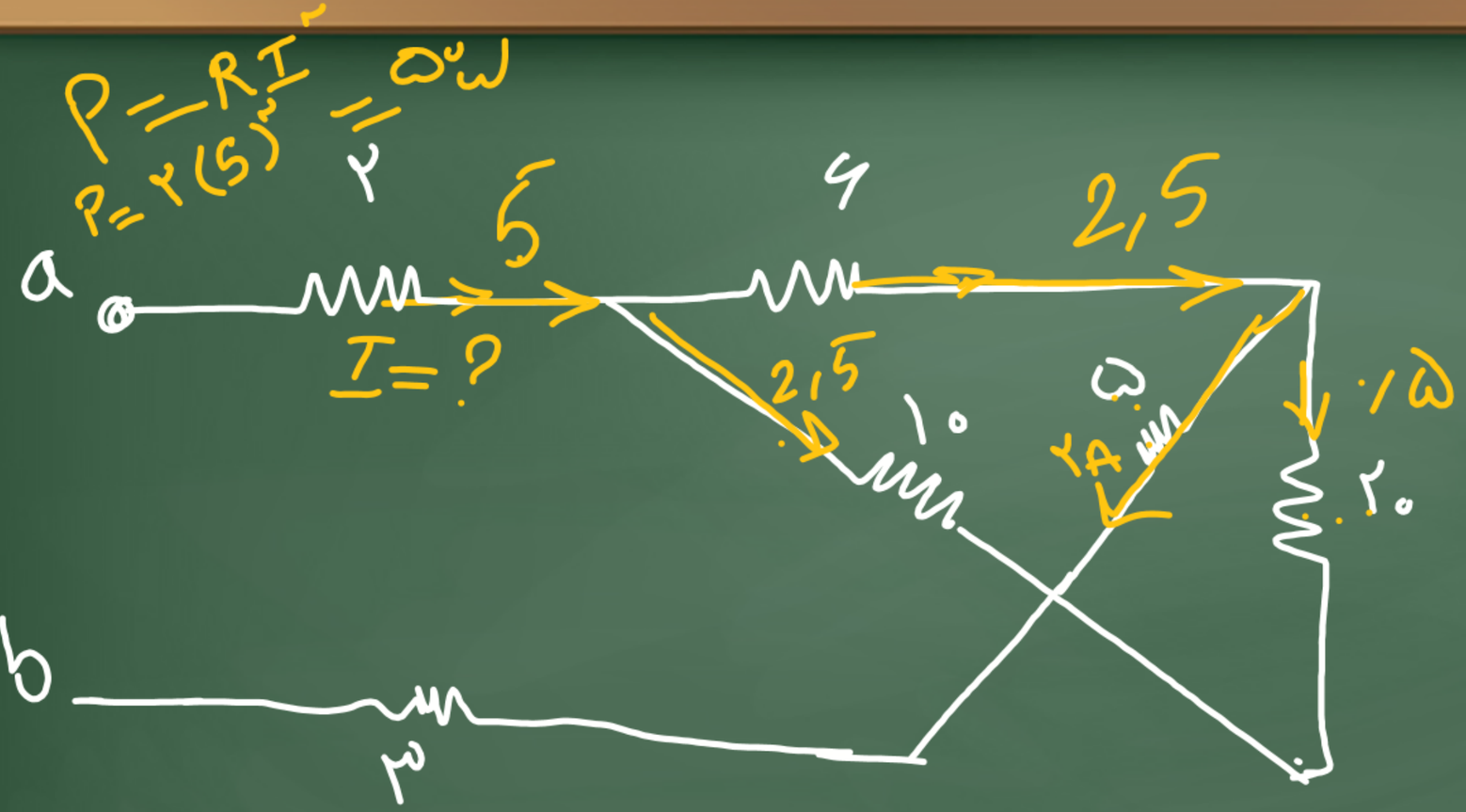
$q = 10\mu C$

سطح $A = 1 cm^2$

$P = \frac{\text{نیروی } F_N}{\text{سطح } A} = \frac{m_A g + \frac{kqq}{R^2}}{1 \times 10^{-4}}$

mg

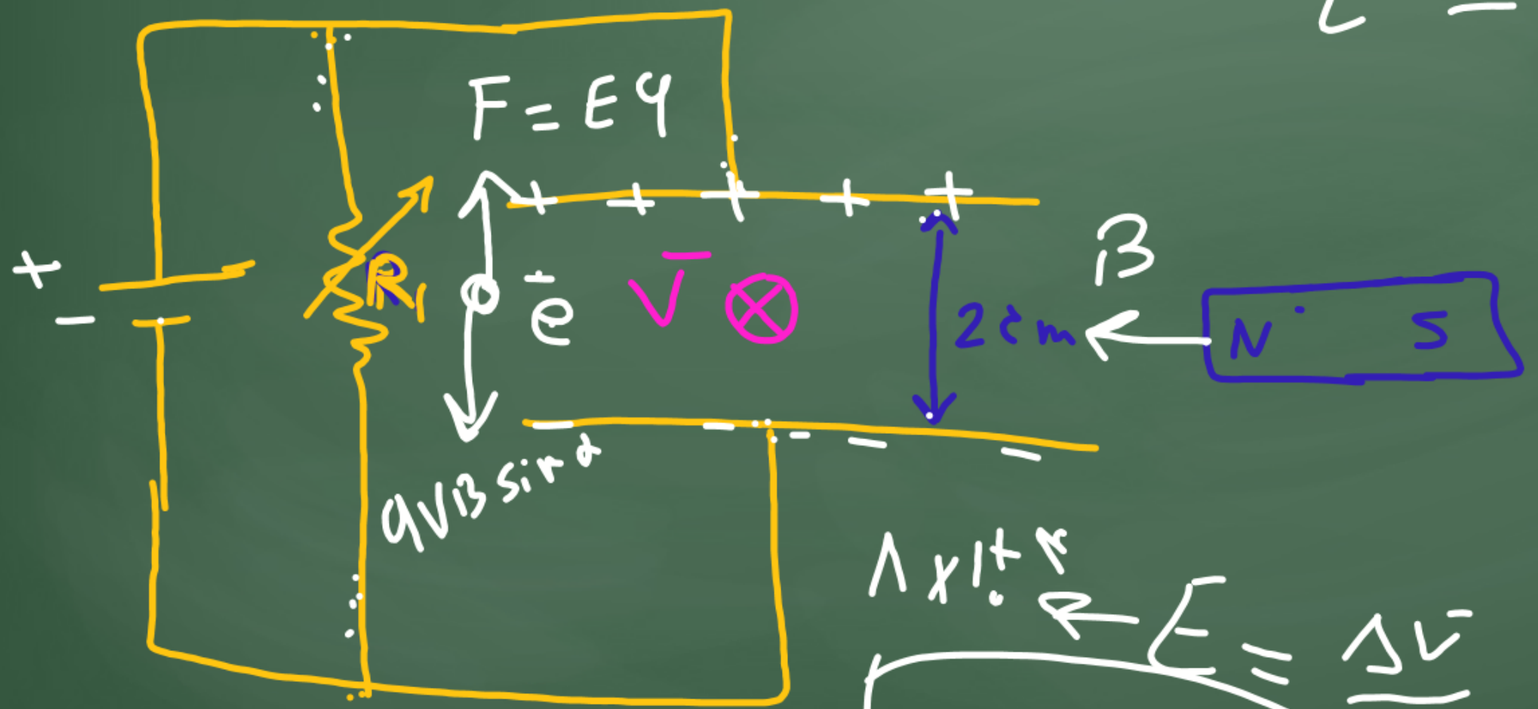
$\frac{2(4 \times 10^{-3})}{10^{-4}} = 80$


P = RI²
P = ۲(۵)²
P = ۵۰W
۲
۵
۴
۲,۵
a
I = ?
۲,۵
۱۰
۳
۲A
۱۵
۲۰
b
۳

$V = 2 \times 10^{6}\ m/s$

$B = 0.2\ T$

e



$Eq = qVB\sin\theta$

$E = 2 \times 10^{6} \times 2 \times 10^{-1}$

$E = 4 \times 10^{5}$

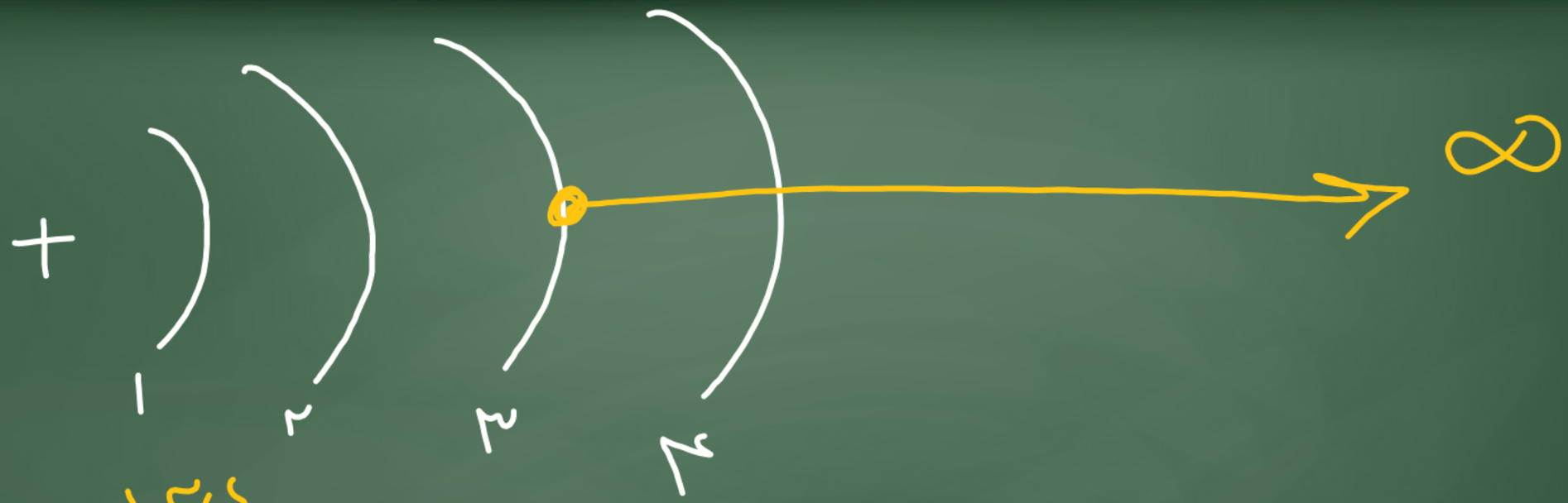
$E = \frac{kq}{R^2}$

$E = \frac{F}{q}$

$E = \frac{\Delta V}{d}$ ← 4×10^{5}

$\Delta V = 16000\ V$

$d \to$?



$$\Delta E = -\frac{E_R}{n^2} - \left(-\frac{E_R}{\infty}\right)$$

$$\frac{12.6}{9} = 1.4$$

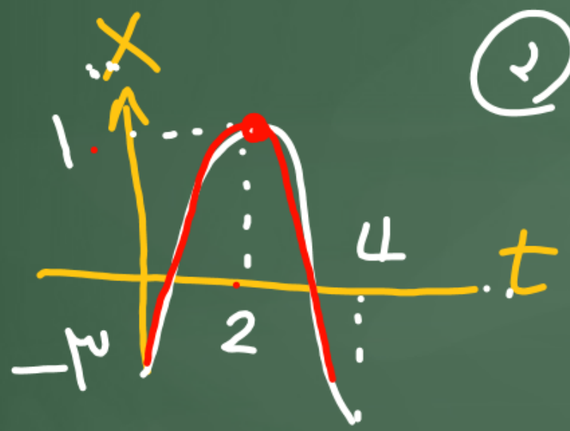
$x = -t^2 + 4t - 3$

$v = -2t + 4$

$t = 0 \rightarrow v = +4$

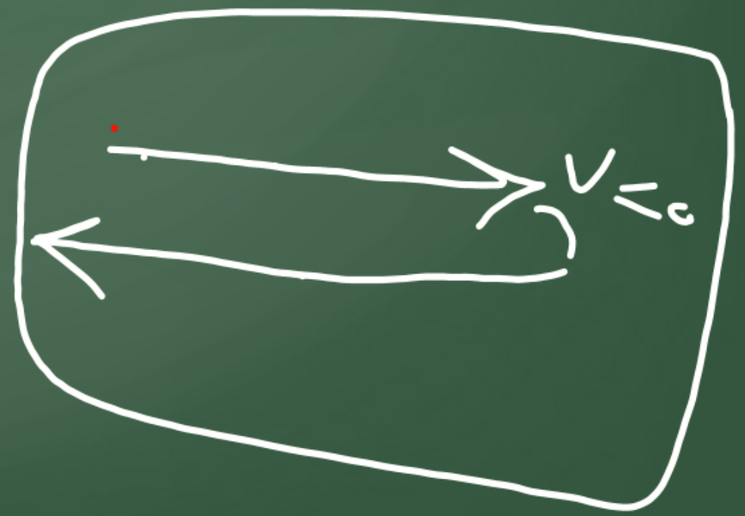
$t = 2 \rightarrow v = 0$

$t = 3 \rightarrow v = -2$

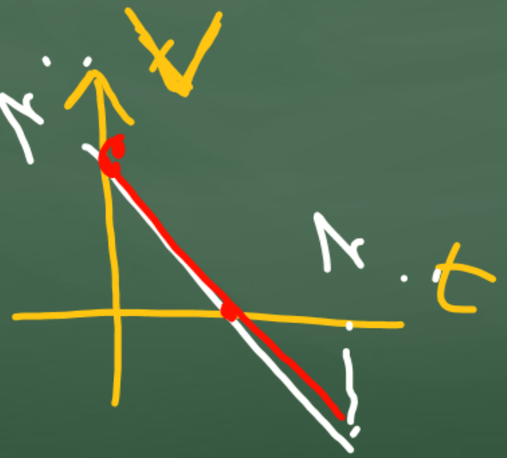


②

①



②



③

$$W = F d \cos\alpha$$

$$W_{وزن} = \pm m g h$$

$$W \begin{cases} W_T = \frac{1}{2} m v_2^2 - \frac{1}{2} m v_1^2 \\ W_T = W_1 + W_2 + \dots \\ W_T = m a d \end{cases}$$

$$mgh_1 + \frac{1}{2}mv_1^2 = mgh_2 + \frac{1}{2}mv_2^2$$

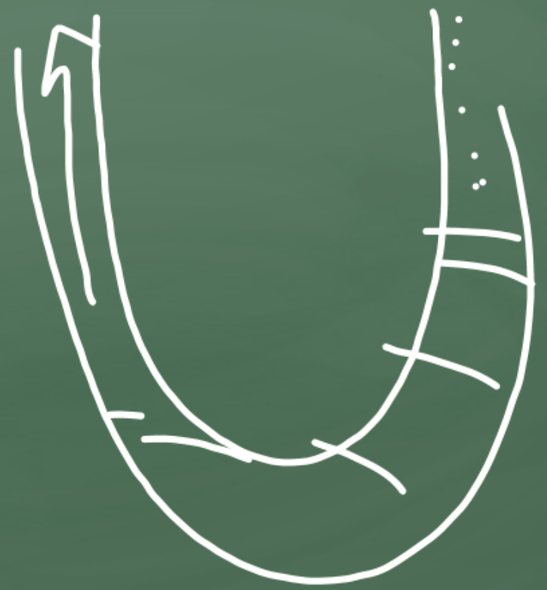
$$\frac{100 - x}{100}\left(mgh + \frac{1}{2}mv_1^2\right) = mgh_2 + \frac{1}{2}mv_2^2$$

$$mgh_1 + \frac{1}{2}mv_1^2 \pm x_{\text{دج}} = mgh_2 + \frac{1}{2}mv_2^2$$

فشار ناشی از مایع $P = \rho g h$

فشار ناشی از جامد $P = \frac{mg}{A}$

فشار ناشی از بخار $P = \frac{1}{2} \rho g h$



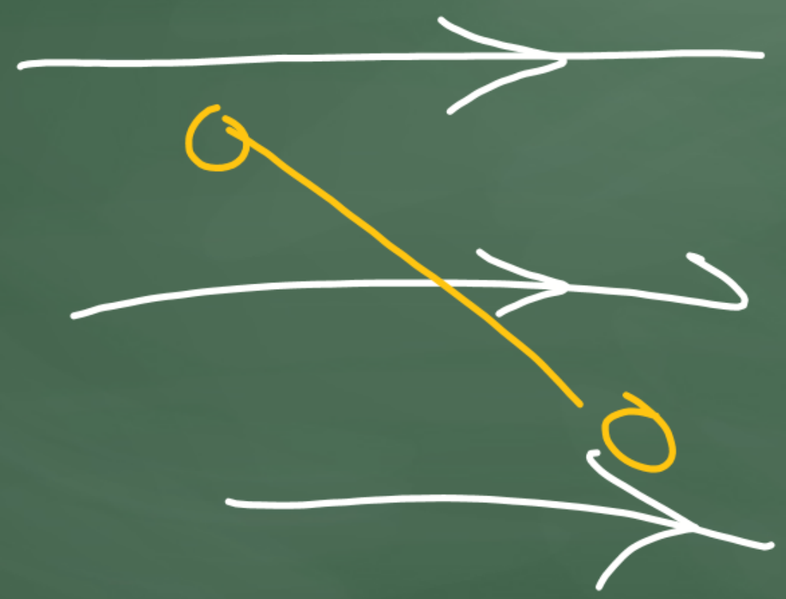
$$\begin{cases} \Delta L = L_1 \alpha \Delta\theta \\ L_2 = L_1(1+\alpha\Delta\theta) \\ \text{متوسط} = 100\,\alpha\Delta\theta \end{cases}$$

$$\varphi_1 + \varphi_2 + \cdots = 0$$

$$\begin{cases} \varphi = m\,g\,\Delta\theta \\ \varphi = mL\omega^2 \\ \varphi = mLv^2 \end{cases}$$

$$F = \frac{k q_1 q_2}{R^2}$$

$$E = \frac{kq}{R^2}$$



$$W_E = E|q|d\cos\alpha$$

$$W_{\text{э.с}} = -W_E$$

$$\Delta U = -W_E$$

$$\Delta\varphi = \pm\frac{\Delta U}{q}$$

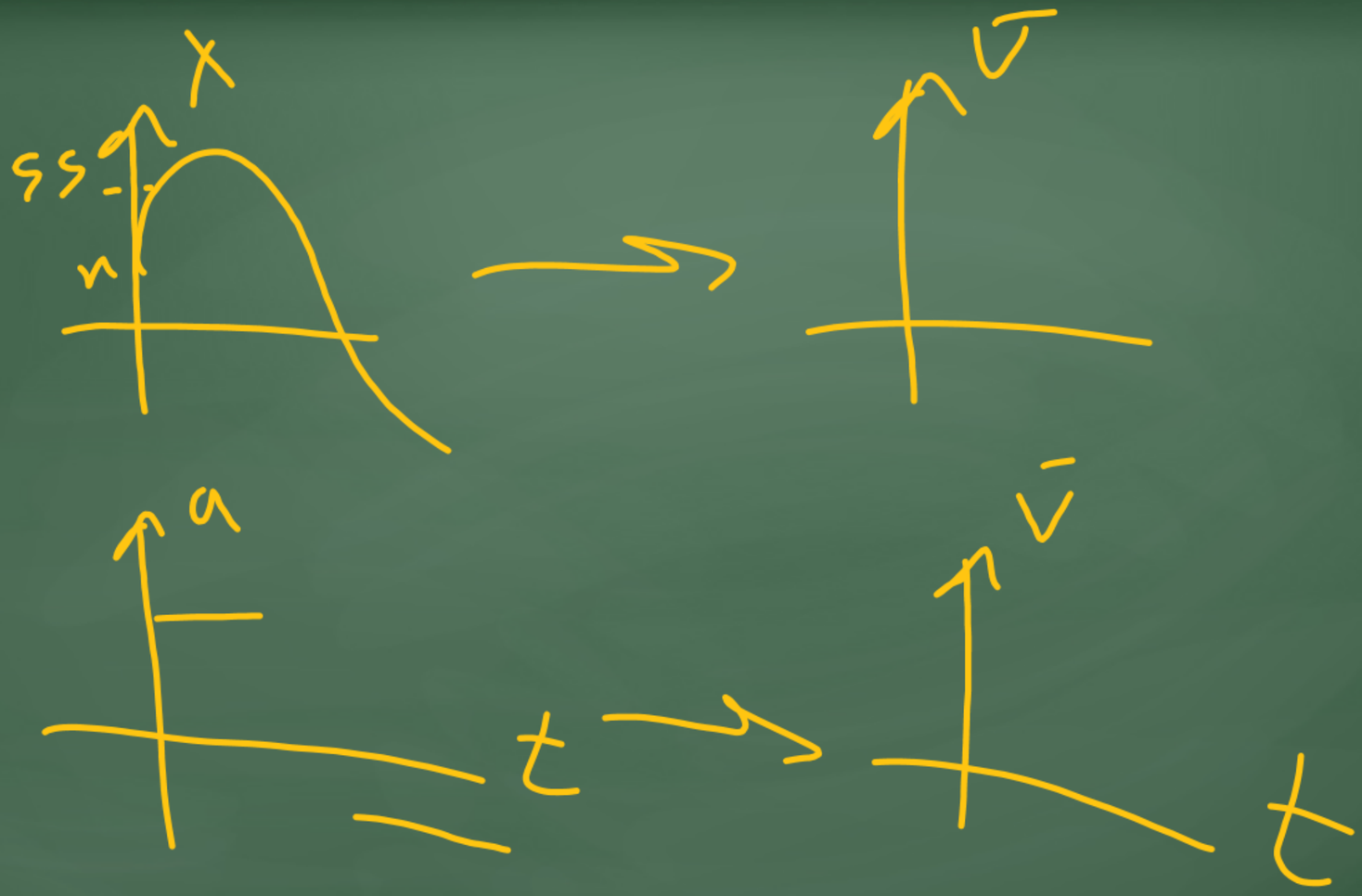
$$P = \frac{V^2}{R} = VI = RI^2$$

توان مولد $P = \varepsilon I$

توان مقاومت $P = rI^2$

توان مفید $P = \varepsilon I - rI^2$

و در نتیجه $R = \varepsilon I + rI^2$


x
ss
n
v
a
t
v
t

آسانسور $\Longrightarrow$ $F_N = m(g \pm \div a)$

$F = m(g \pm a)$

اگر $F_s = \mu_s F$

اصطکاک ایستایی $f_s = \mu_s F_N = F$

جسم $f_k = \mu_k \cdot F_N$

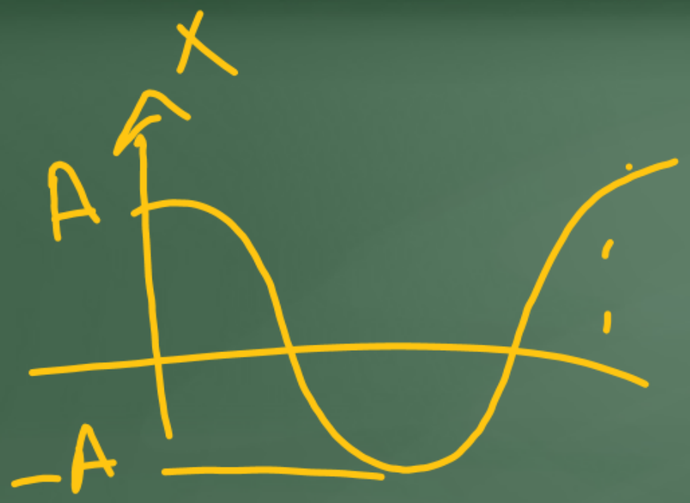
$$R = \sqrt{f_{ks}^2 + F_1^2}$$

$$p = m\vec{v}$$

$$\Delta p \begin{cases} \Delta p = m\Delta v \\ \Delta p = F\Delta t \\ \Delta p = \end{cases}$$

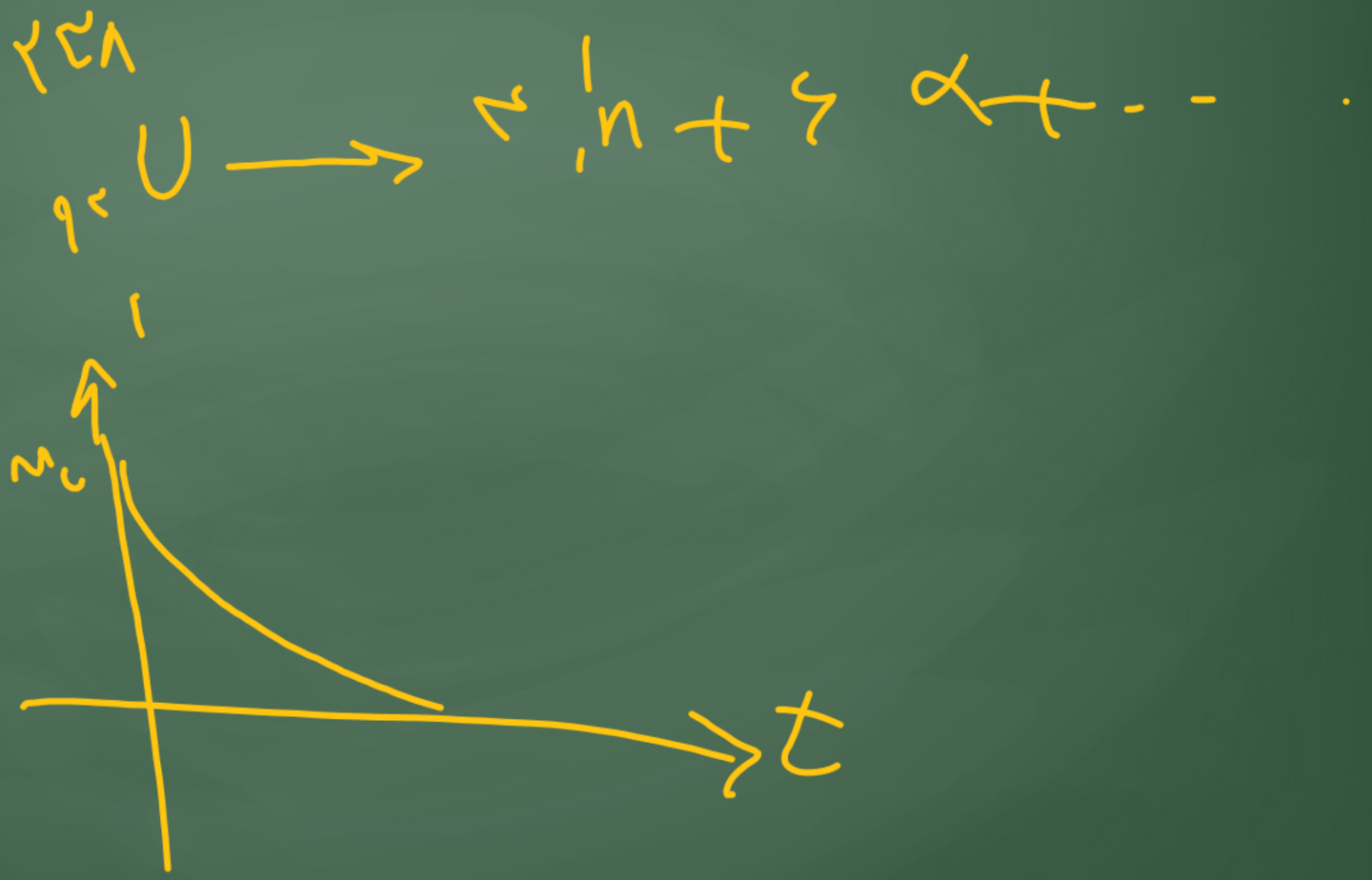
$$\simeq I_o$$

$$K = \frac{1}{2}\frac{p^2}{m}$$



$$\frac{1}{\lambda} = R\left(\frac{1}{n'^2} - \frac{1}{n^2}\right)$$

$$E = \omega_0 + k_m$$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