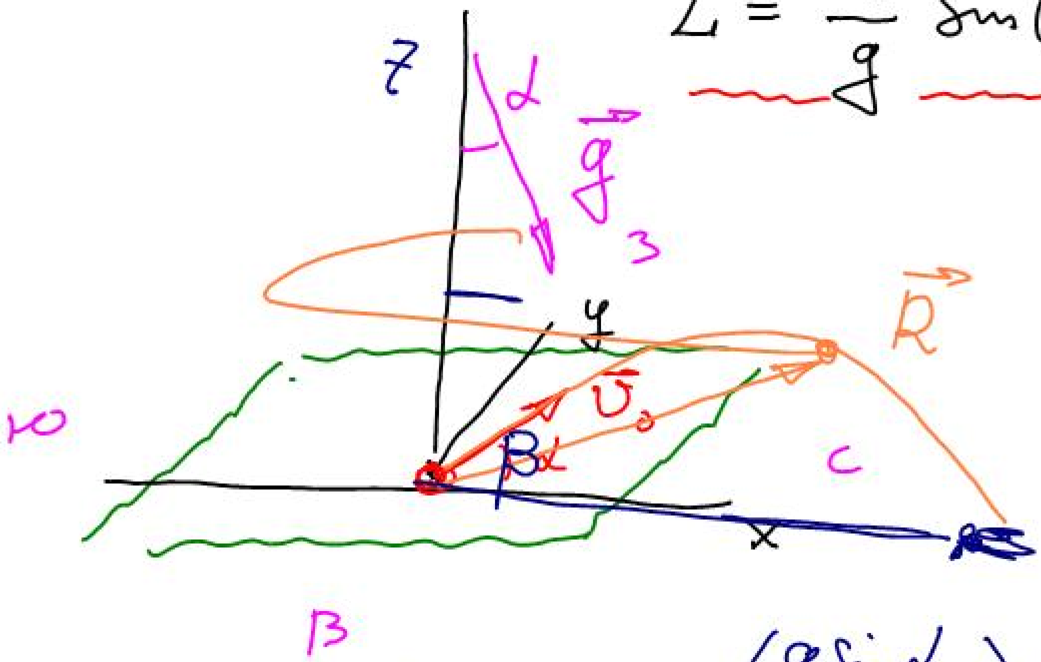
$$L = \frac{v_0^2}{g}\sin(2\alpha)$$



$$\underline{\vec{R} = \vec{v}_0 t + \frac{1}{2}\vec{g}t^2} \quad (*) \quad \vec{g} = \begin{pmatrix} g\sin\alpha \\ 0 \\ -g\cos\alpha \end{pmatrix}$$

$$\begin{cases} g_x = g\sin\alpha \\ g_y = 0 \\ g_z = -g\cos\alpha \end{cases}$$

$$R_z = V_0\sin\beta\cdot t + \frac{1}{2}(-g\cos\alpha)t^2 .$$

$$0 = V_0\sin\beta\cdot T - \frac{1}{2}g\cos\alpha\, T^2$$

$$V_0\sin\beta\,\cancel{T} = \frac{1}{2}g\cos\alpha\, T^{\cancel{2}} \Longrightarrow \left[\begin{array}{l} 0 \\ T = \dfrac{2V_0\sin\beta}{g\cos\alpha} \end{array}\right.$$

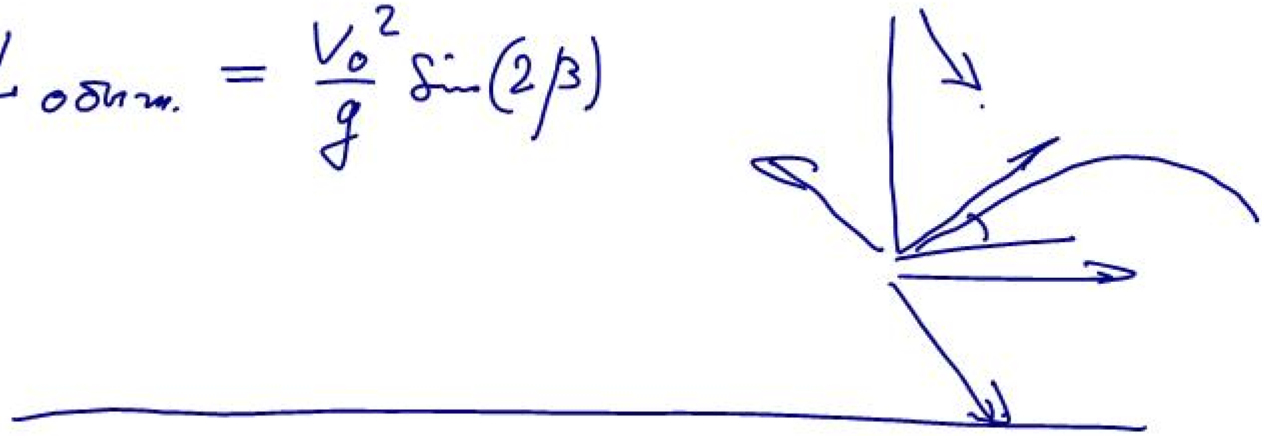
$$\left(T_{\text{обыч.}} = \frac{2V_0\sin\beta}{g}\right)$$

$$R_x = V_0\cos\beta\cdot t + \frac{1}{2}g\sin\alpha\cdot t^2 \quad L = V_0\cos\beta\, 2V_0\sin$$

$$L = R_\alpha(t=T) = V_0 \cos\beta \,\frac{2V_0 \sin\beta}{g\cos\alpha} + \frac{1}{2} g \sin\alpha \,\frac{4V_0^2 \sin^2\beta}{g^2\cos^2\alpha} =$$

$$= \frac{V_0^2}{g}\left(\frac{\sin(2\beta)}{\cos\alpha} + \frac{\cancel{4}}{\cancel{2}}\, 2\,\frac{\sin\alpha \sin^2\beta}{\cos^2\alpha}\right)$$

$$L_{\text{обычн.}} = \frac{V_0^2}{g}\sin(2\beta)$$



Законы Ньютона (з-ны классической динамики).

$$\vec{R} \leftarrow \begin{cases}\bar{V}(t) \\ \bar{R}_0\end{cases} \leftarrow \begin{cases}\bar{a}(t) \\ \bar{V}_0\end{cases} \leftarrow \begin{cases}\bar{S}(t) \\ \bar{a}_0\end{cases}$$

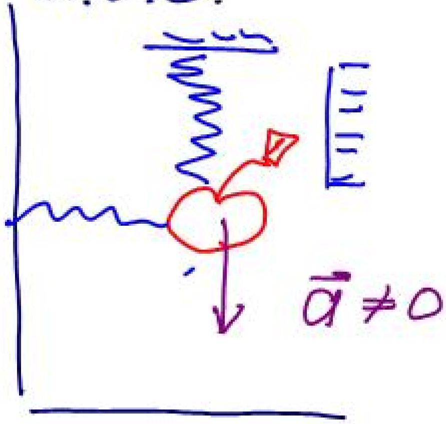
$$\vec{a} = \frac{\bar{F}}{m}$$

$$\vec{F} = m\vec{a}$$

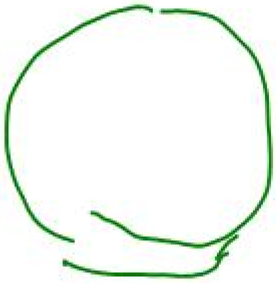
$$\equiv \quad \equiv$$

$$N_p \cdot m_p + N_n m_n + N_e \cdot m_e + \ldots \equiv m$$

И.С.О.



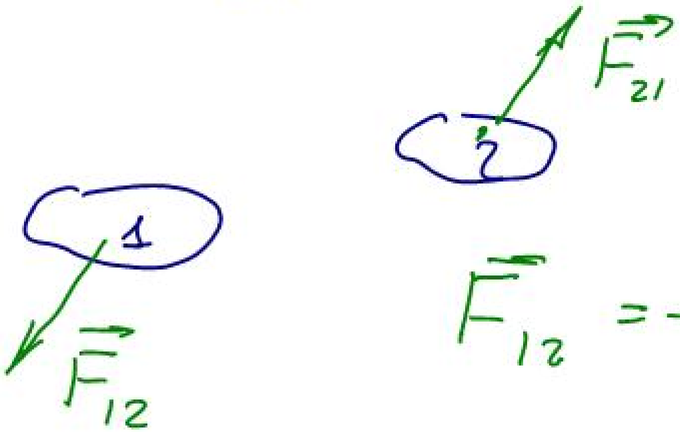
$$\boxed{\vec{a} \sim \vec{F}}$$



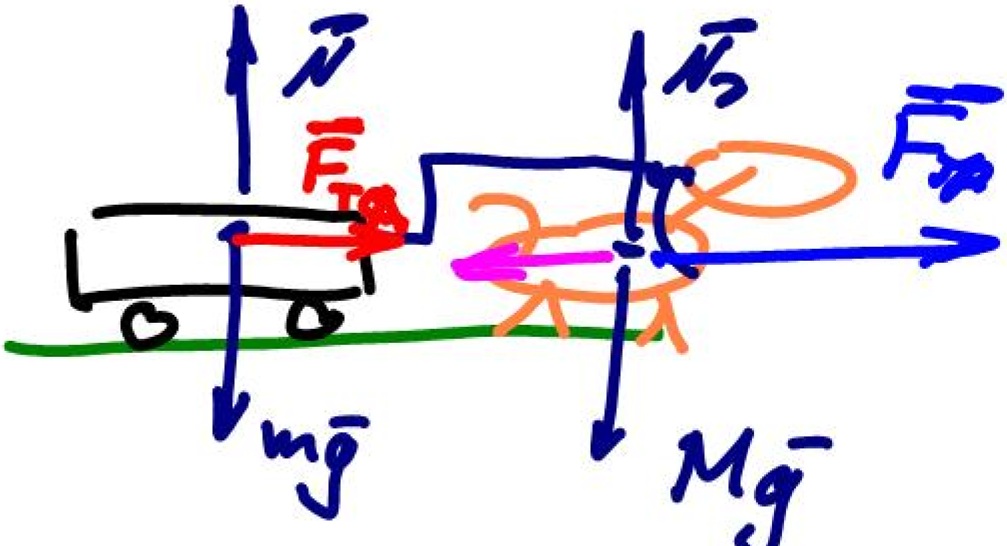
$$\frac{|F|}{|\vec{a}|} \equiv m_и$$

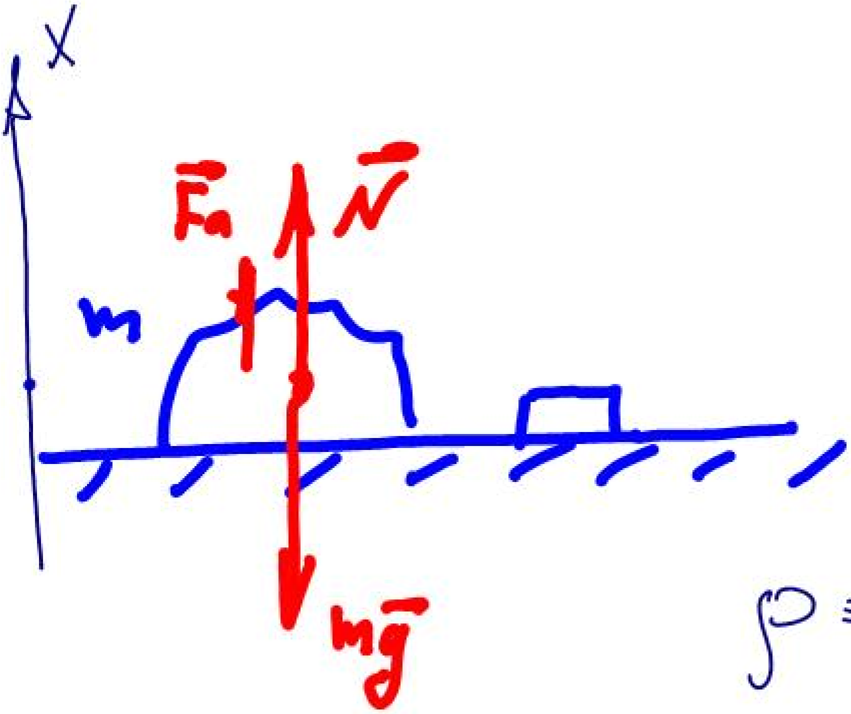
1) m - число
2) $m \geq 0$
3) $m \neq f(\vec{r}, \vec{v})$
4) $m = m_1 + m_2 + \ldots + m_N$

$$\vec{a} = \frac{\vec{F}}{m}$$



$$\vec{F}_{12} = -\vec{F}_{21}$$





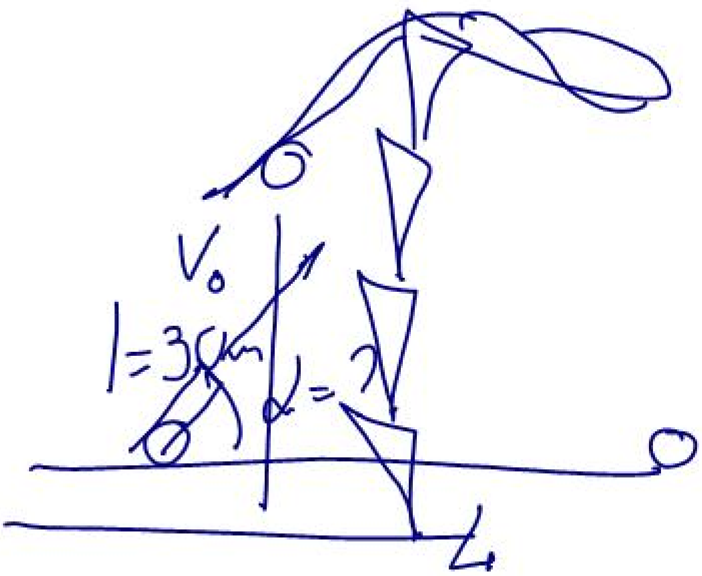
$$\rho = \frac{m}{V}$$

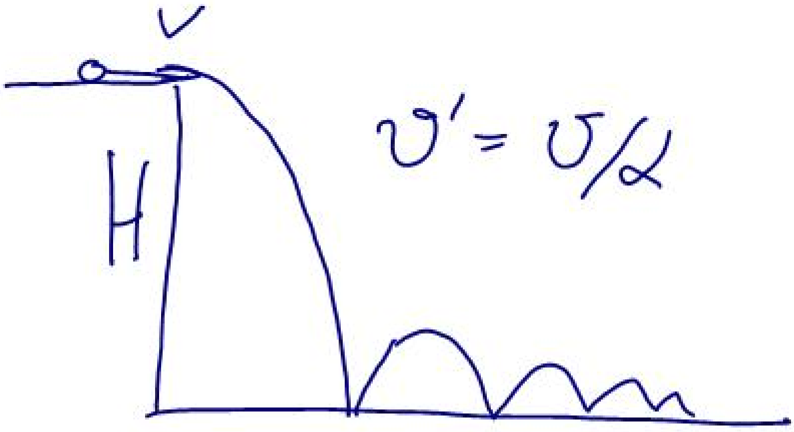
$$0 = m\vec{a} = m\vec{g} + \vec{N} + \vec{F}_a$$

$$0 = -mg + N + F_a$$

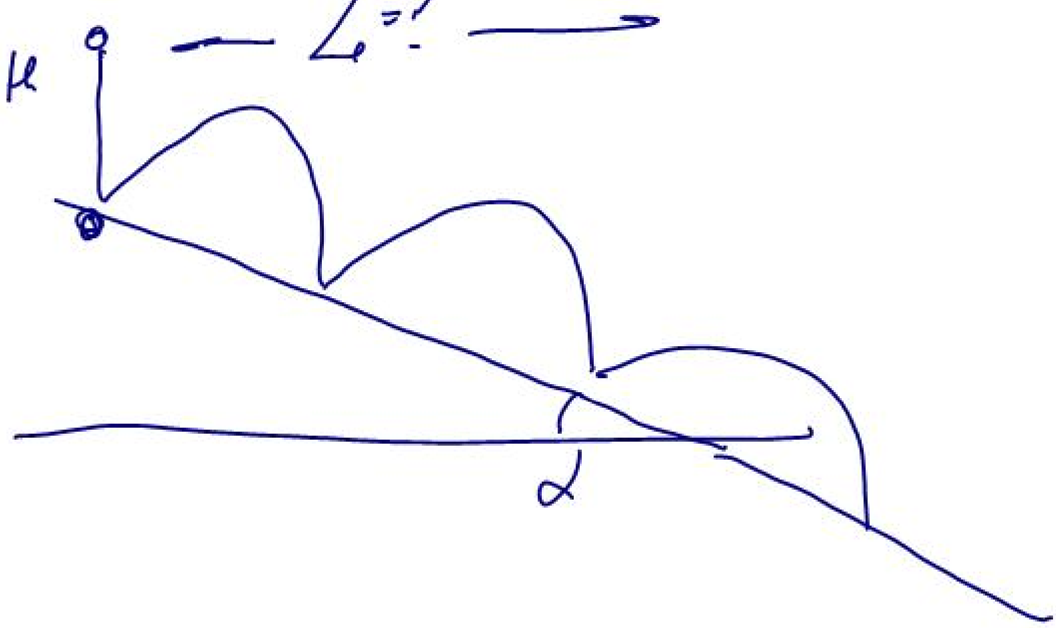
$$N = mg - F_a = mg - m'g =$$

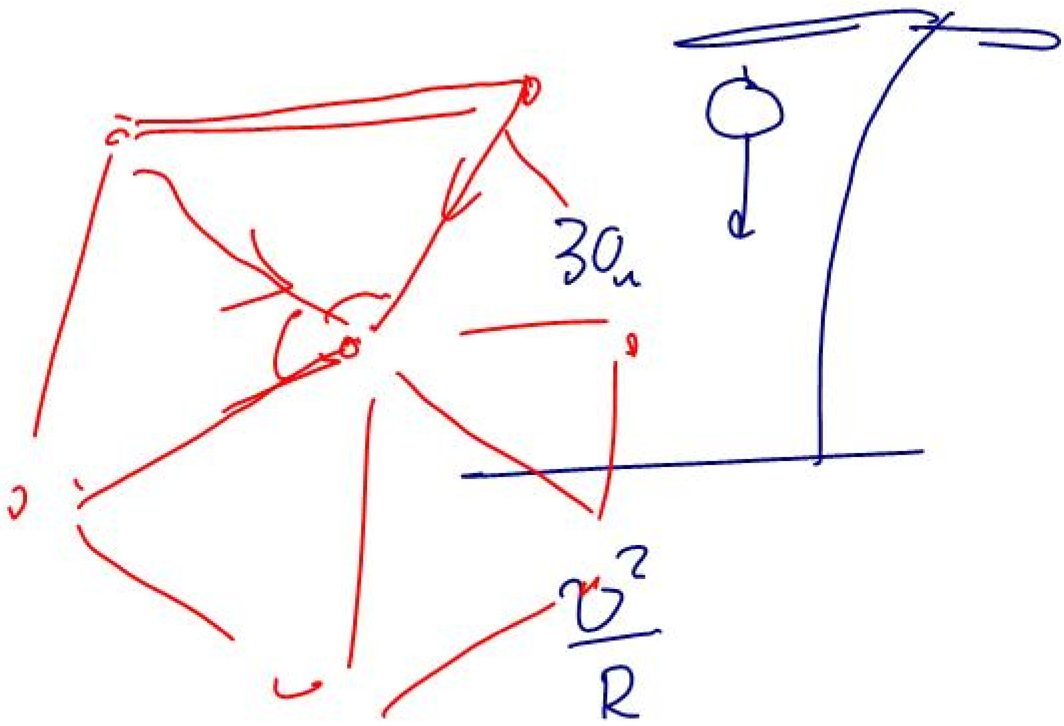
$$= mg - \underbrace{\frac{m}{\rho_T}}_{=V} \cdot \rho_в g = mg\left(1 - \frac{\rho_в}{\rho_T}\right)$$

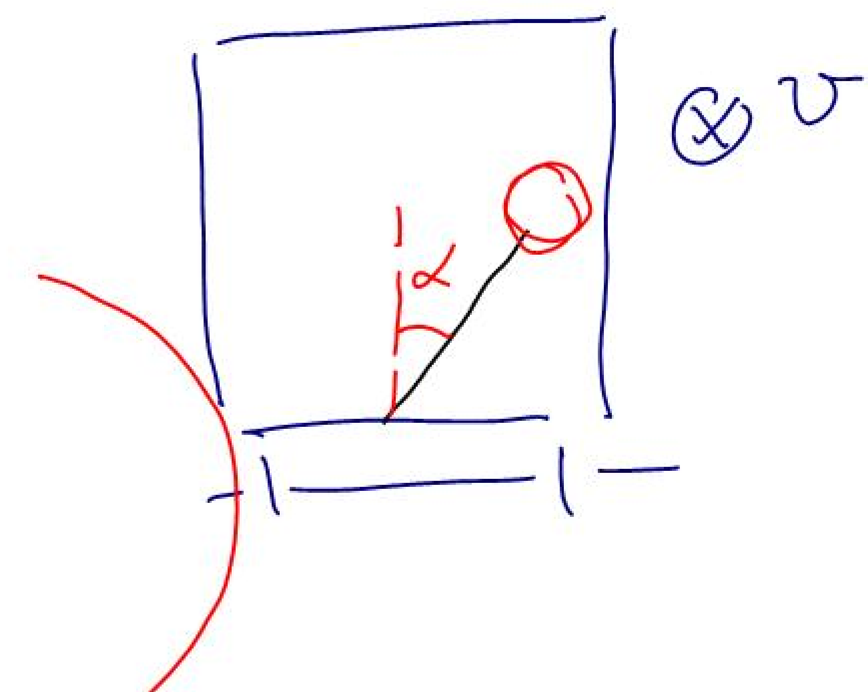




$$v' = v/2$$




30м
$\frac{v^2}{R}$


$\otimes v$
α