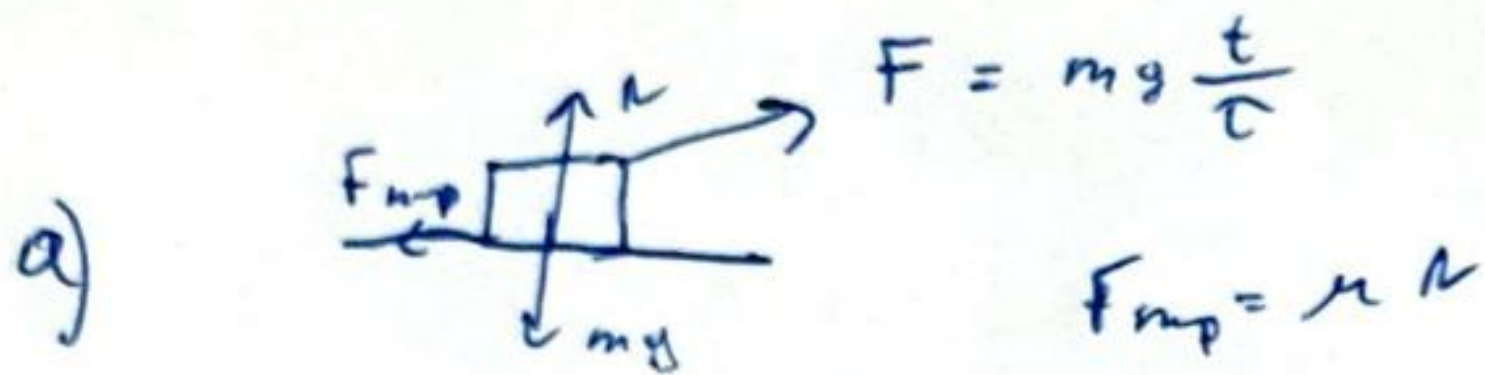


Задача 1.А)



(1) $mg = N + mg \frac{t}{c} \sin \alpha$

(2) $mg \frac{t}{c} \cos \alpha - \mu N = ma$

из (1), (2): $a = g \left(\frac{t}{c} (\cos \alpha + \mu \sin \alpha) - \mu \right)$

$t_0 = \hat{c} \cdot \frac{\mu}{\cos \alpha + \mu \sin \alpha}$ - время начала движения.

$N=0 \rightarrow mg = mg \frac{t}{c} \sin \alpha \rightarrow t_1 = \frac{\hat{c}}{\sin \alpha}$ - время остановки

$$\Delta t = t_1 - t_0 = \hat{c} \left(\frac{\cos \alpha}{\sin^2 \alpha + \mu + \cos \alpha \sin \alpha} \right)$$

б)

$$a(t) = a(t' + t_0) = g \left(\frac{t'}{c} (\cos \alpha + \mu \sin \alpha) \right)$$

$$v(t') = \int_0^{t'} a(t') dt'$$

$$L = \int_0^{t'} v(t') dt' = \frac{g (\cos \alpha + \mu \sin \alpha)}{\hat{c}} \cdot \frac{t'^3}{6}$$

Задача 15.

масса корриума: $m_{\text{кор}} = 0.300 \text{ кг} \cdot 0.3 \frac{\text{г}}{\text{г}} = 0.09 \text{ г}$

$$0.25 \leq \frac{0.09}{0.3 + n \cdot 0.007} \Rightarrow n \leq 8.5 \Rightarrow \boxed{n = 8}$$

конбо мочу.

$$m_1 = n \cdot m_0 = 5.6 \text{ г.}$$

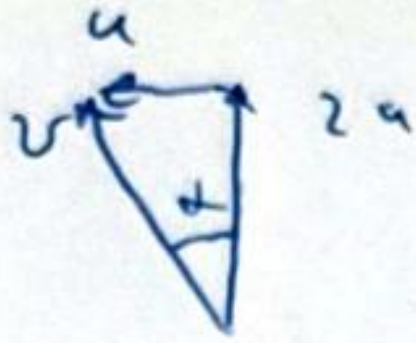
$$m_k = 300 \text{ г}$$

$$m_1 \cdot \lambda + c m_1 (\vartheta - 0^\circ) = c m_k (80^\circ - \vartheta) \Rightarrow$$

$$\Rightarrow \boxed{\vartheta = 54.7^\circ \text{C}}$$

Задача 12

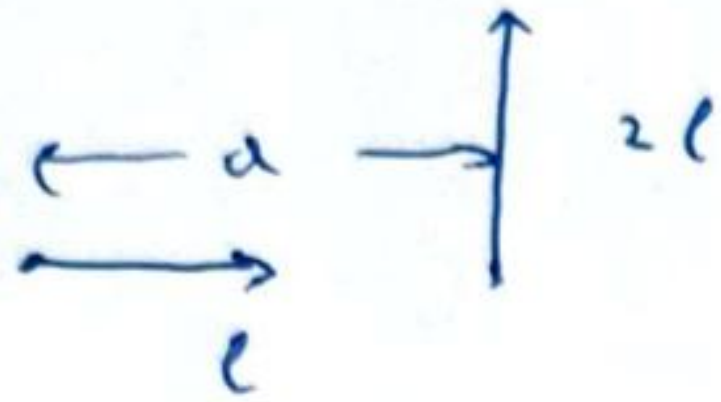
a)



$$v = \sqrt{5} u$$

$$t = \arctan\left(\frac{1}{2}\right)$$

б)



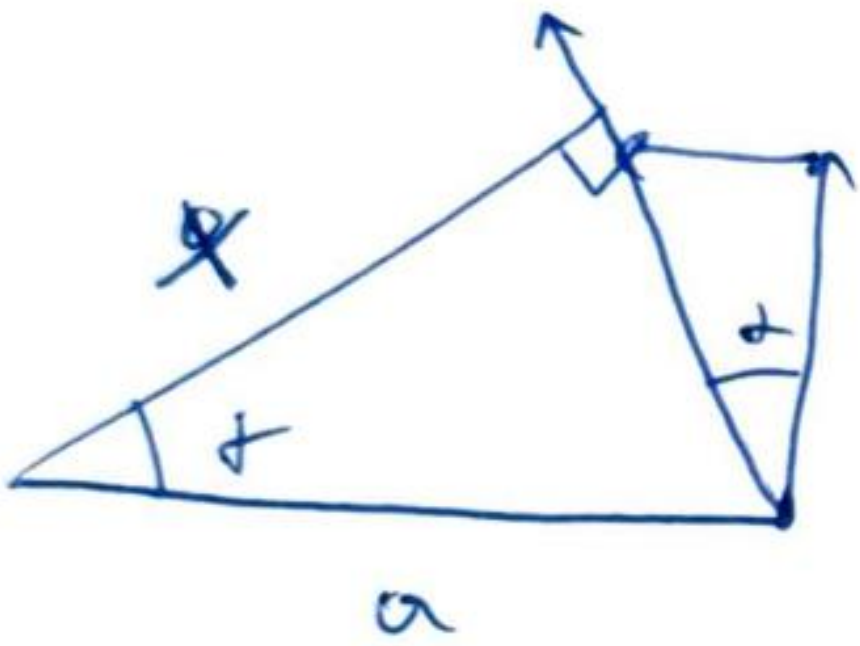
$$(a-l)^2 + (2l)^2 = (3a)^2$$

$$\Downarrow$$

$$l = a \left(\frac{1 + \sqrt{41}}{5} \right)$$

$$t = \frac{l}{a} = \frac{a}{u} \cdot \frac{1 + \sqrt{41}}{5}$$

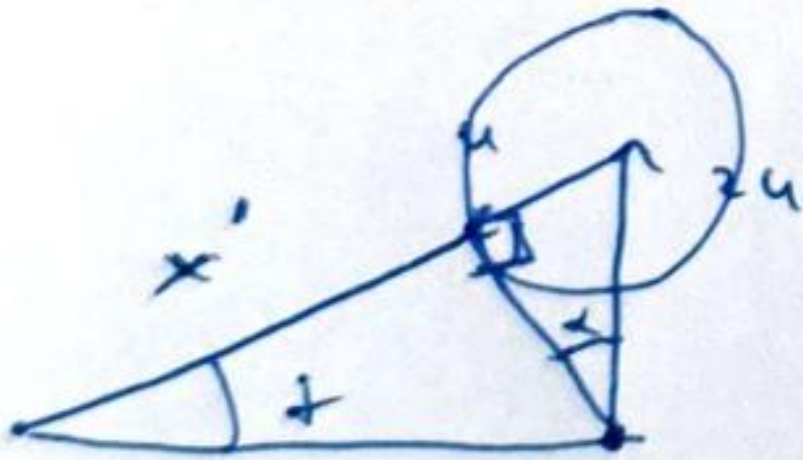
в)



$$x = a \cdot \cos t = a \cdot \frac{2}{\sqrt{5}}$$

$$t = \frac{a}{5u}$$

г)



$$\sin t = \frac{1}{2}$$

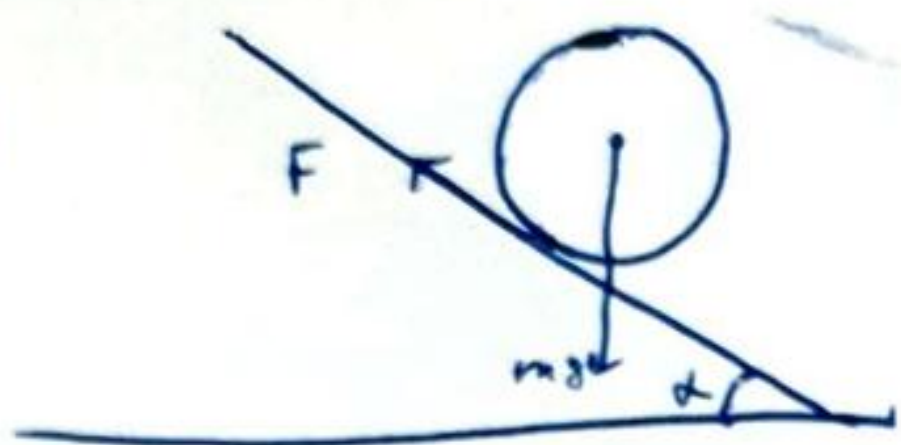
$$t = 30^\circ$$

$$x' = a \cdot \cos t = \frac{\sqrt{3}}{2} a$$

$$\Delta x = x - x' = \frac{4\sqrt{5} - 5\sqrt{3}}{10} a$$

Задача 13

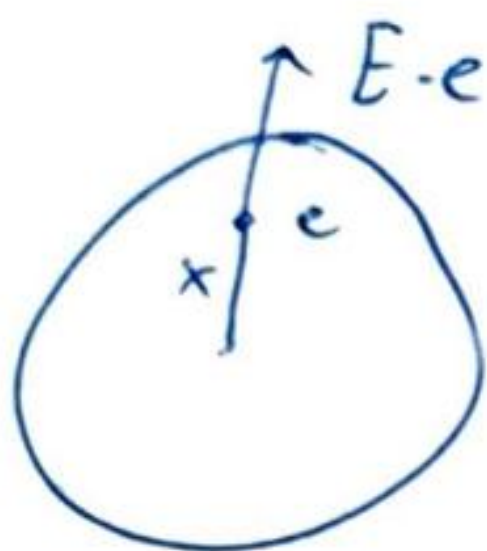
a)



$$\left\{ \begin{aligned} ma &= mg \cdot \sin \alpha - F \\ \frac{mR^2}{2} \cdot \frac{a}{R} &= FR \end{aligned} \right.$$

$$a = \frac{2}{3} g \sin \alpha$$

b)



$$Ee = m_e \omega^2 x$$

$$\Delta \varphi = \int_0^R E dx = \frac{m_e \omega^2 R^2}{2e}$$

c)

$$\frac{v^2}{2} = a \cdot l$$

$$v^2 = \frac{2 \Delta \varphi e}{m_e}$$

$$l = \frac{3 \Delta \varphi e}{2 m_e \cdot g \sin \alpha} = 5.3 \cdot 10^{-10} \text{ м}$$