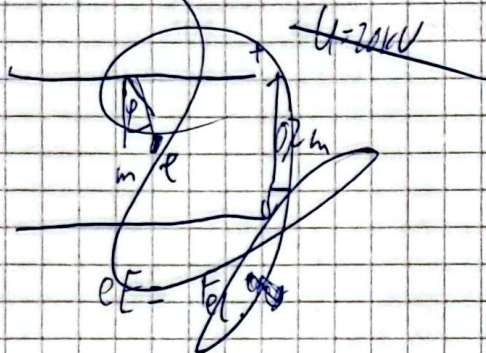


2021/22

2023/24
1. kol.

5. naloga

~~2021/22~~



$$\vec{p} \cdot \vec{v} = 0.$$

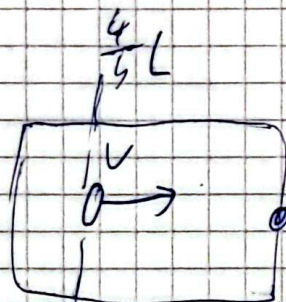
$$mg \frac{t^2}{2} = +V_0$$

$$t^2 = \frac{2V_0}{g \cdot \gamma}$$

$$t = \sqrt{\frac{2V_0}{g \cdot \gamma}} \quad \text{vstavimo v } X.$$

$$F_{tr} = k(t) \cdot v$$

$$a_r = -g \cdot k(t)$$



$$V_0 = 5 \frac{h}{s}$$

$$k(t) = \gamma t \quad \gamma = 1 \cdot \frac{1}{s}$$

$$L = 3m$$

ali preloži
ploščo k 3m?

$$\frac{dx}{dt} = -g \gamma \frac{t^2}{2} + V_0$$

$$x = -g \gamma \int_0^t \frac{t^2}{2} dt + V_0 \int_0^t dt$$

$$x = -g \gamma \frac{t^3}{6} + V_0 t$$

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

$$F_{tr} = m g k(t) = k a \quad \text{ko } v = 0.$$

$$a = -g k(t)$$

$$x_{max} =$$

$$t^2 =$$

$$v = \frac{dx}{dt}$$

$$a = \frac{dv}{dt} \cdot \frac{dt}{dx}$$

$$a dx = v dv$$

$$a = \frac{dv}{dt} \quad v$$

$$\int_0^t a dt = \int_{V_0}^v dv$$

$$-g \gamma \frac{t^2}{2} = v - V_0$$

$$-g \gamma \frac{t^2}{2} = v - V_0$$

$$x = -\frac{g}{6} \left(\frac{2v_0}{g} \right)^{\frac{5}{2}} + v_0 \sqrt{\frac{2v_0}{g}}$$

8.

1. izpit 2024, 25. 1. 2024.

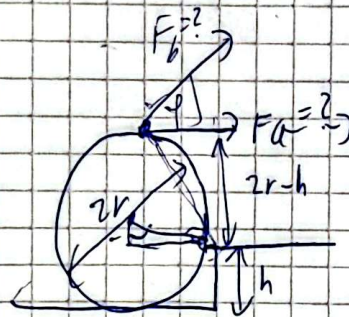
2. nal.

$$R = 30 \text{ cm}$$

$$m = 2 \text{ kg}$$

$$h = 10 \text{ cm}$$

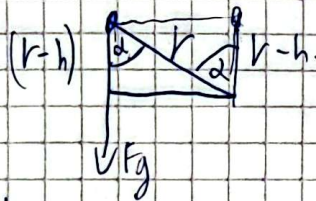
a)



$$R^2 = \left(\frac{2R-h}{2} \right)^2 + \left(\frac{2R-h}{2} \right)^2$$

$$\sqrt{\frac{(2R-h)^2}{2}}$$

$\vec{M} \neq 0$ zadrig.



$$M_a = (2R-h) \cdot F_a$$

$$\vec{M}_g = mg \cdot \sin \alpha$$

$$\sin \alpha = \cos \alpha = \frac{(R-h)}{R}$$

F_a

$$F_a \cdot (2R-h) = mg \frac{\sqrt{(2R-h)^2}}{R}$$

b)

$$\vec{r}_b = r \cdot (\sin \alpha, \cos \alpha) + r(0, 1)$$

$$\vec{r}_b = r (\sin \alpha, \cos \alpha + 1)$$

$$|\vec{r}_b| = |r| \cdot \sqrt{\sin^2 \alpha + \cos^2 \alpha + 2 \cos \alpha + 1} =$$

$$= |r| \cdot \sqrt{2 + 2 \cos \alpha}$$

$$\vec{M}_b = |\vec{r}_b| \times \vec{F}_b$$

$$\vec{F}_b = F_b (\cos \varphi, \sin \varphi)$$

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