

Fizika I - izpit 31.1.2003 - Resitve

$$1) \quad F - F_0 - m_A g (\sin \alpha + k_A \cos \alpha) = m_A a$$

$$F_0 - m_B g (\sin \alpha + k_B \cos \alpha) = m_B a$$

$$a = 1,19 \text{ m/s}^2$$

$$2) \quad \omega = 2\pi \sqrt{\frac{f}{Mg r^3}}$$

$$M = 2m$$

$$f = m \left(\frac{L^2}{3} + \frac{2}{5} r^2 + a^2 \right) \quad r^3 = \frac{m f + m a^2}{2m} = \frac{f}{2}$$

$$t_0 = 1,9 \text{ s}$$

$$3) \quad V_1 T_1^{2\gamma-1} = V_2 T_2^{2\gamma-1}$$

$$\frac{V_2}{V_3} = \left(\frac{V_1}{V_2} \right)^{\frac{1}{\gamma}} = 2,64$$

$$\frac{V_3}{V_1} = 0,38$$

$$p_1 V_1^{\gamma} = p_2 V_2^{\gamma}$$

$$\frac{p_1 V_1}{T_1} = \frac{p_2 V_2}{2T_2}$$

$$\frac{V_1}{V_3} = \frac{p_2}{p_1} = \left(\frac{V_1}{V_2} \right)^{\frac{1}{\gamma}} = 2^{\frac{1}{\gamma}} = 2,64$$

$$4) \quad A_{\text{ogr}} = \int_0^h F_{\text{ogr}}(x) dx = \int_0^h \rho g h \left(1 + \frac{h^2}{3b^2} \right) dx \quad \text{delo sile razgona}$$

$$A - A_{\text{ogr}} = W_p = \rightarrow \text{delo sile razgona} - \text{delo teže}$$

$$= \rho g h \left(1 + \frac{h^2}{3b^2} \right) - m g h = 0,0124 \text{ J}$$