

# Fizika I - izpit 31.1.2003 - Resitve

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

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

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

$$2) \quad t_0 = 2\pi \sqrt{\frac{M}{k_1 + k_2}}$$

$$M = 2m$$

$$f = m \left( \frac{1}{3} + \frac{2}{5} r^2 + a^2 \right) \quad r^2 = \frac{m \frac{1}{2} + m a^2}{2m} = \frac{1}{4}$$

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

$$3) \quad v_1 \cdot T_1^{2x-1} = v_2 \cdot T_2^{2x-1}$$

$$\frac{v_2}{v_3} = \left( \frac{v_1}{v_2} \right)^x = 2,64$$

$$\frac{v_3}{v_1} = 0,38$$

$$p_1 v_1^x = p_2 v_2^x$$

$$\frac{p_1 v_1}{T_1} = \frac{p_2 v_2}{2T_2}$$

$$\frac{v_1}{v_3} = \frac{p_2}{p_1} = \left( \frac{v_1}{v_2} \right)^x =$$

$$= 2^{\frac{1}{x}} = \underline{\underline{2,64}}$$

$$4) \quad A_{\text{avg}} = \int_0^h F_{\text{avg}}(z) \cdot dz = \int_0^h \rho g \cdot h \left( 1 + \frac{h^2}{3z^2} \right) dz \quad \text{delo vile regona}$$

$$A - A_{\text{avg}} = W_p = \rightarrow \text{delo vile regona} - \text{delo teže}$$

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