

$$1 \quad a_z = 1,6g$$

$$1.1.1 \quad a_z = \frac{V^2}{r} \Rightarrow V_C = \sqrt{a_z * r} = \sqrt{1,6 * g * r}$$

$$1.2.1 \quad E_{ges} = E_{KinC} + E_{potC} = \frac{1}{2} * m * V_C^2 + m * g * 2r$$

$$E_{ges} = 1/2 * m * 1,6 * g * r + 2mgr = 0,8mgr + 2mgr = \underline{2,8mgr}$$

$$1.2.2 \quad E_{ges} = E_{Kin}(h) + E_{Pot}(h)$$

$$2,8mgr = \frac{1}{2} * m * [v(h)]^2 + mgh \quad /:m; *2$$

$$5,6rg = [v(h)]^2 + gh \Rightarrow 5,6rg - 2gh = [v(h)]^2$$

$$v(h) = \sqrt{g(5,6r - 2h)}$$

$$1.2.3 \quad F_z = \frac{m * v^2}{r} \Rightarrow F_z = \frac{m * g(5,6r - 2h)}{r} \quad \text{mit } h = r \Rightarrow F_z = 3,6 \frac{mgr}{r} = 3,6mg$$

$$F_z = 3,6 * 1,2 * 10^3 \text{ Kg} * 9,81 \text{ m/s}^2 = \underline{42 * 10^3 \text{ N}}$$

$$1.2.4 \quad E_{ges} = E_{KinB} + E_{PotB}; \text{ mit } E_{PotB} = 0 \Rightarrow 2,8mgr = 1/2 m V_B^2 \Rightarrow V_B = \sqrt{5,6rg}$$

$$\text{oder aus 1.2.2 } V(h) = \sqrt{5,6rg} = \sqrt{5,6 * 8,0 \text{ m} * 9,81 \text{ m/s}^2} = 21 \text{ m/s}$$

$$1.2.5 \quad E_{PotA} = E_{KinB}; mgh = 1/2 m V_B^2 = h = 1/2 * V_B^2 / g = 22,47... \approx 22 \text{ m}$$

$$1.3.0 \quad |a| = g + 0,33g = \underline{1,33g}$$

$$1.3.1 \quad |F_m| = m * |a| = 1,33mg = 1,33 * 1,2 * 10^3 \text{ Kg} * 9,81 \text{ m/s}^2 = \underline{16 \text{ KN}}$$

1.3.2 Skizze auf doc

$$V(t) = V_B + a * t; \quad a < 0; \quad V(t) = 0$$

$$0 = V_B + at \Rightarrow t = \frac{V_B}{a}$$

$$t = \frac{21 \text{ m/s}}{1,33 * 9,81 \text{ m/s}^2} = 1,6 \text{ s}$$

1.3.3 Skizze auf doc

$$s(t) = V_B * t - \frac{1}{2} * a * t^2$$