

5.4.15 $r = 10,4 \text{ cm}$

5.4.16
$$\alpha = \frac{8g(R^3 - r^3)}{9\pi(R^4 + r^4)}$$

5.4.17 a) $\alpha = 5,163 \text{ rad/s}^2$,
b) $\mu = 0,056$

5.4.18 $v_A = 1 \text{ m/s}$

5.4.19 $a = 1,4 \text{ m/s}^2$

5.4.20 $h_k = 7,14 \text{ m}$

5.4.21 $\beta = 46,88^\circ$

5.4.22 a) $h = 0,135 \text{ m}$, b) $v_B = 1,33 \text{ m/s}$

5.4.23 $\varphi = 55,15^\circ$

5.4.24 a) $\alpha = 7,976 \text{ rad/s}^2$,
b) $\omega = 7,292 \text{ rad/s}$

5.4.25 $a = 0,7124 \text{ m/s}^2$, $S_1 = 73,16 \text{ N}$,
 $S_3 = 76,72 \text{ N}$

5.4.26 a) $v_1 = 1,583 \text{ m/s}$,
b) $a_1 = 0,835 \text{ m/s}^2$,
c) $F_{s1} = 179,5 \text{ N}$,
d) $F_{s2} = 167 \text{ N}$

5.4.27 a) $v_1 = 2,521 \text{ m/s}$,
b) $a_1 = 3,179 \text{ m/s}^2$,
c) $F_{s1} = 83,17 \text{ N}$,
d) $F_{s2} = 91,14 \text{ N}$

5.4.28 $v_D = 0,7225\sqrt{g} = 2,263 \text{ m/s}$

5.4.29 $\omega = 7,746 \text{ rad/s}$

5.4.30 $F_S = 105,1 \text{ N}$, $F_{S1} = 112,1 \text{ N}$,
 $a_B = 0,7 \text{ m/s}^2$

5.4.31
$$\mu = \left(\frac{rR + i^2}{R^2 + i^2} \right) \frac{F}{F_g}$$

5.4.32 $t = \frac{d\omega_0}{6g\mu} \approx 0,68 \text{ s}$, $v \approx 1,33 \text{ m/s}$

5.4.33 $v_S = u - r\omega$, $v_S = \frac{2}{7}u$, $t = \frac{2u}{7g\mu}$

5.4.34 $v_A = 0,784 \text{ m/s}$, $v_B = 0,392 \text{ m/s}$,
 $a_A = 3,57 \text{ m/s}^2$, $a_B = 1,78 \text{ m/s}^2$,
 $\omega_B = 1,57 \text{ rad/s}$, $\alpha_B = 7,14 \text{ rad/s}^2$,
 $S_A = 1,25 \text{ kN}$, $S_B = 1,07 \text{ kN}$

5.4.35 $\omega_A = 16,0 \text{ rad/s}$, $F_B = 12,0 \text{ N}$,
 $v_B = 8,0 \text{ m/s}$, $F_t = 4,0 \text{ N}$

5.4.36 $a_A = 3,394 \text{ m/s}^2$, $F_N = 0,33 \text{ N}$

5.4.37
$$a_A = g \frac{m_B - 3\mu m_A}{3m_A + m_B}$$

$$a_A = g \frac{m_B + (2 - \mu)m_A}{3m_A + m_B}$$

5.4.38 $\omega = 29,23 \text{ rad/s}$

5.4.39 $v_A = 3 \text{ m/s}$, $a_A = 53,14 \text{ m/s}^2$,
 $F_N = 26,57 \text{ N}$