

RESPOSTAS DOS EXERCÍCIOS PROPOSTOS

CAPÍTULO 6

DINÂMICA DOS CORPOS RÍGIDOS

6.1:	<p>a) $\alpha_G^x = \frac{T}{m\ell}(2\theta \operatorname{sen} \theta - \cos \theta) + g \operatorname{sen} \theta(2 - 3\cos \theta);$ $\alpha_G^y = -\frac{T}{m\ell}(2\theta \cos \theta + \operatorname{sen} \theta) - g(1 + 2\cos \theta - 3\cos^2 \theta);$ b) $R_B^t = 0; R_B^n = 549,1 \text{ N}; R_B^x = 142,1 \text{ N}; R_B^y = -530,4 \text{ N};$ $R_C^t = 2500 \text{ N}; R_C^n = -120,8 \text{ N}; R_C^x = 2446 \text{ N}; R_C^y = -530,4 \text{ N}$</p>
6.2:	<p>a) $\vec{v}_G = -2\sqrt{\frac{gh}{3}} \vec{j}; \ \vec{v}_G\ = 2\sqrt{\frac{gh}{3}}; \text{ b) } T = \frac{mg}{3}$</p>
6.3:	<p>a) $\mu = 0,136; \text{ b) } \vec{a}_G = 1,112\vec{i} \text{ [m/s}^2\text{]}$</p>
6.4:	<p>$\vec{a}_G = 0,652\vec{i} \text{ [m/s}^2\text{]}$</p>
6.5:	<p>a) $\alpha = \frac{5\mu_{din} g}{2r}; \text{ b) } t = \frac{2v_0}{7\mu_{din} g}$</p>
6.6:	<p>a) $a = 1,73 \text{ m/s}^2; \text{ b) } R_x = 5,19 \text{ m}; R_y = 29,43 \text{ m}$</p>
6.7:	<p>$F = 438 \text{ N}$ (para baixo)</p>
6.8:	<p>$\omega = 0,689 \text{ rad/s}$</p>
6.11:	<p>$\vec{a}_A = -2,31\vec{i} \text{ [m/s}^2\text{]}; H_A = -138,47 \text{ N}; V_A = -196,2 \text{ N}$</p>
6.12:	<p>$\omega = 1,66 \text{ rad/s}$ (sentido anti-horário)</p>
6.13:	<p>$\vec{v}_D = 1,08\vec{i} \text{ [m/s]}$</p>
6.14:	<p>$\vec{v}_C = -1,55\vec{i} \text{ [m/s]}$ (para a esquerda); $\vec{\omega}_{OC} = -4,42\vec{k} \text{ [rad/s]}$ (sentido horário)</p>
6.15:	<p>a) $\vec{v}_G = 5,025\vec{i} \text{ [m/s]}; \text{ b) } N = 851,2 \text{ N}$ (para cima)</p>
6.16:	<p>a) $\omega _2 = 8,69 \text{ rad/s} = 83 \text{ r.p.m}; \text{ b) } \Delta E = 758,84 \text{ J}$</p>

6.17: $\omega = \frac{111}{4,267 \operatorname{sen}^2 \theta + 3,2 \operatorname{sen} \theta + 5,3}$ para $0 \leq \theta \leq 90^\circ$

6.18: $\omega = \frac{143l^2 \omega_0}{119l^2 + 96\left(\frac{l}{2} + s\right)^2}$

6.19: $\vec{v}_B = \frac{F}{4m} t \vec{i}$

6.20: $\vec{A} = -\frac{T}{2a} \vec{i} + \frac{T}{4a} \vec{j}; \vec{B} = -\frac{T}{4a} \vec{i} + \frac{T}{2a} \vec{j}$

6.21: $\dot{\psi} = -10,171 \text{ rad/s} = -97,13 \text{ r.p.m. (sentido anti-horário em torno de } z_1)$
