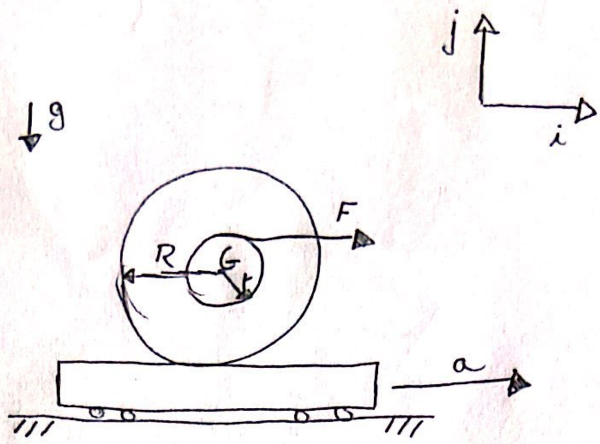
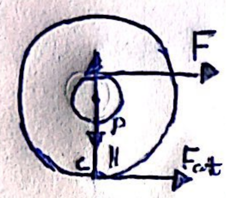
Igor Eiki F. Kubota
Ra: 19.02466-5



a-)



b-) $\sum M_C = J_G \vec{\alpha} + m(G-C) \wedge \vec{a}_G$

$\alpha = \frac{a - a_G}{R} \Rightarrow a_G = a - \alpha R$

$-F(r+R) = mk^2\alpha + mR(a - \alpha R)$

$-F(r+R) = mk^2\alpha + mRa - mR^2\alpha$

$-F(r+R) - mRa = \alpha(mk^2 - mR^2)$

$$\boxed{\vec{\alpha} = -\frac{[F(r+R) + mRa]}{mk^2 - mR^2}\vec{k}}$$

c-) $a_G = a - \alpha R$

$a_G = a - R\left(-\frac{[F(r+R) + mRa]}{mk^2 - mR^2}\right)$

$$\Rightarrow \boxed{\vec{a}_G = a + R\left[\frac{F(r+R) + mRa}{m(k^2 - R^2)}\right]\vec{i}}$$

d-) $\sum F_y = m \cdot \overset{0}{a_{Gy}} = 0$

$N - P = 0$

$N = P$

$\boxed{N = mg}$

$\sum F_x = m \cdot a_{Gx}$

$F + F_{at} = m \cdot a_{Gx}$

$F + F_{at} = m\left[a + \left(\frac{F(r+R) + mRa}{m(k^2 + R^2)}\right)R\right]$

$$\boxed{F_{at} = m\left[a + \left(\frac{F(r+R) + mRa}{m(k^2 + R^2)}\right)R\right] - F}$$

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