1) $\bar{R} = \bar{0}$ $\quad \bar{V} = \widetilde{cost}$

2) $\bar{a} = \frac{\bar{F}}{m}$ $\quad \bar{\alpha} = \ddot{\bar{\vartheta}} = \frac{\bar{M}}{I}$

3) $\bar{R}_{1/2} = \bar{R}_{2/1}$

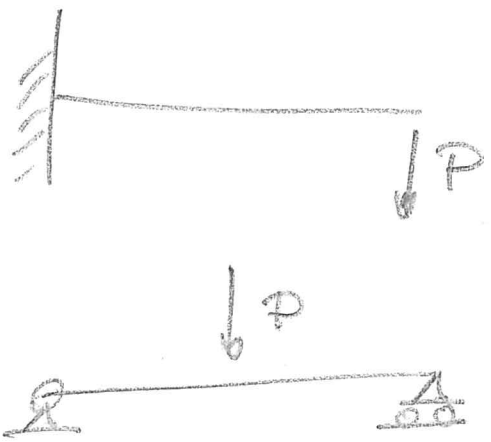
$\bar{F}_i' = -m\bar{a}$

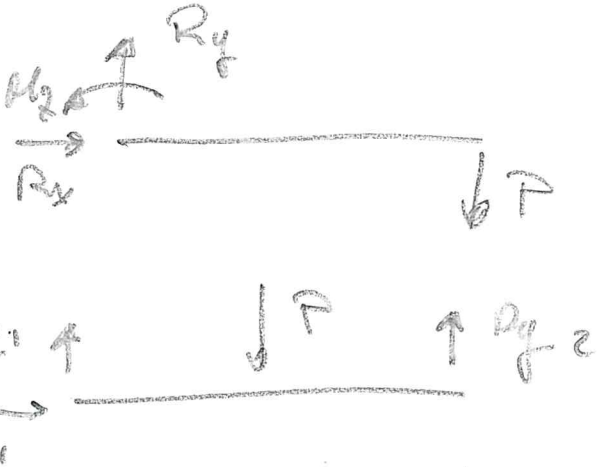
$\sum \bar{F}_e + \bar{F}_i' = \bar{0}$

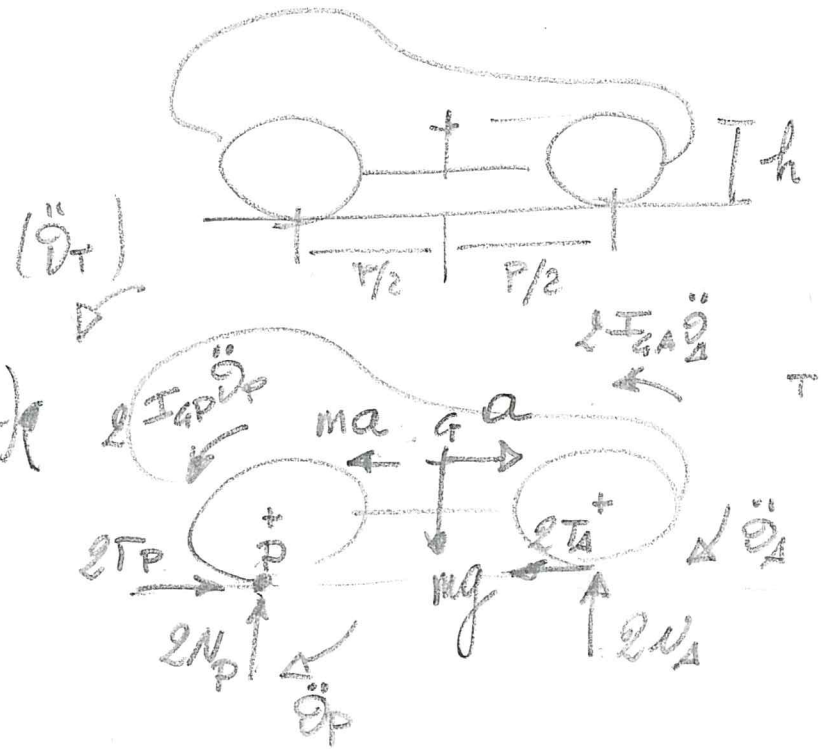
$\bar{R} + \bar{F}_i' = \bar{0}$

$\sum \bar{M}_e + \bar{M}_i' = \bar{0}$

DIAGRAMMA DI CORPO LIBERO



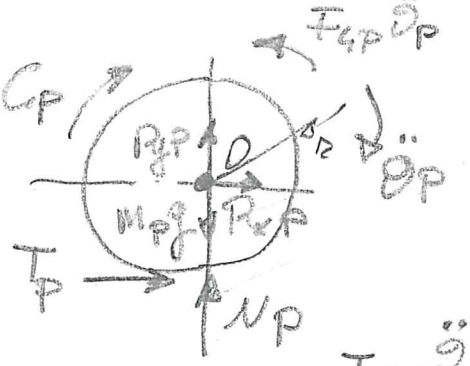




$$x)\quad 2T_P - 2T_A - ma = 0$$

$$y)\quad 2N_P + 2N_A - mg = 0$$

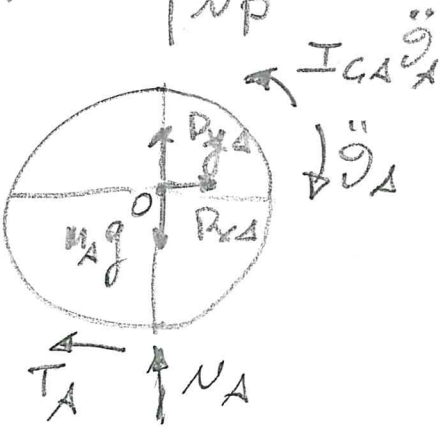
$$\Sigma P)\quad 2N_A r - mg\frac{r}{2} + ma\cdot h + 2I_{GP}\ddot{\vartheta}_P + 2I_{GA}\ddot{\vartheta}_A = 0$$



$$R_{xP} + T_P = 0$$

$$R_{yP} + N_P - mg = 0$$

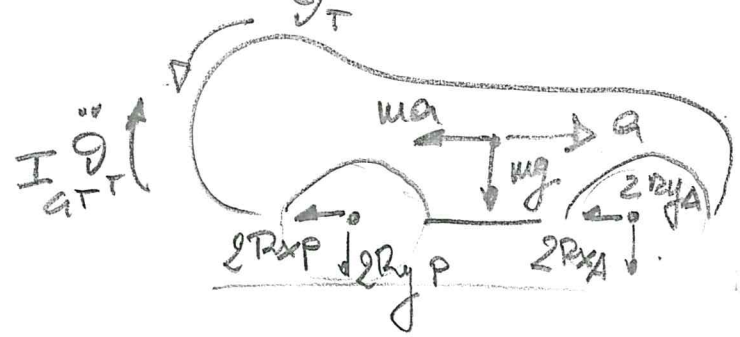
$$\curvearrowleft O)\quad T_P r + I_{GP}\ddot{\vartheta}_P - C_P = 0$$

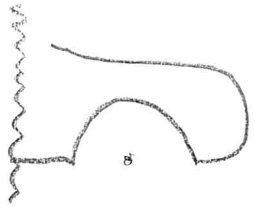


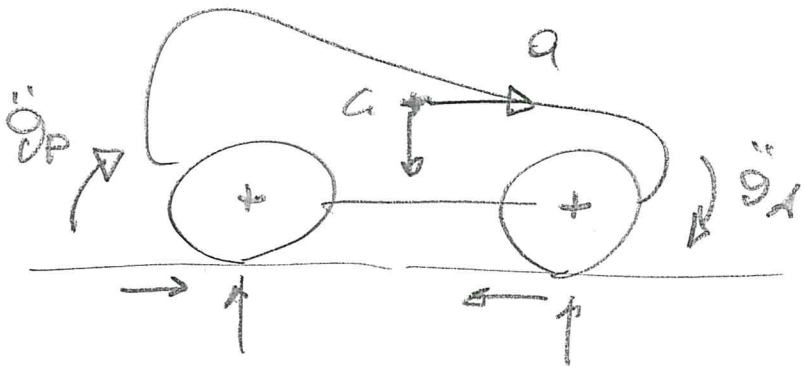
$$R_{xA} - T_A = 0$$

$$N_A + R_{yA} - mg = 0$$

$$\curvearrowleft O\quad T_A r - I_{GA}\ddot{\vartheta}_A = 0$$







$r_A = r_P = r$

ROLAMENTO SEM STRISCIAMENTO

$\ddot{\vartheta}_A = \ddot{\vartheta}_P = \ddot{\vartheta}$

* $a = r\ddot{\vartheta}$

$$\vec{a} = \frac{\vec{F}}{m}$$

INT. SPOSTAM.

LAVORO ENERGIA

EQ. CONS. EN.

INT TEMPO

QUANTITÀ DI MOTO

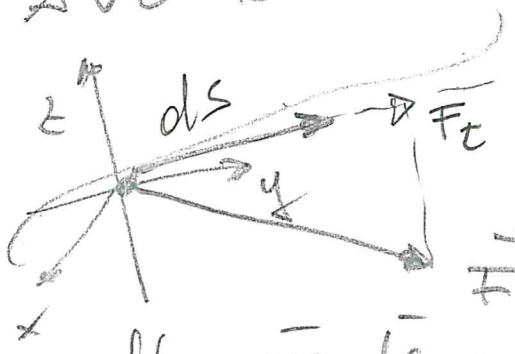
MOM. " " "

CONSERVAZIONE

Q d M

MOM. Q. di MOTO

LAVORO



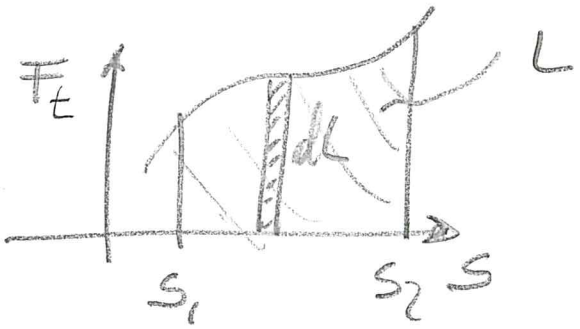
LAVORO DI $\vec{F}$

$$dL = \vec{F} \cdot d\vec{s}$$

$$(L) = (N\,m.) = (J)$$

$$dL = \vec{F} \cdot d\vec{S} = F_t\, dS$$

$$L = \int_{S_1}^{S_2} \vec{F} \cdot d\vec{S} = \int_1^2 F_x dx + F_y dy + F_z dz$$



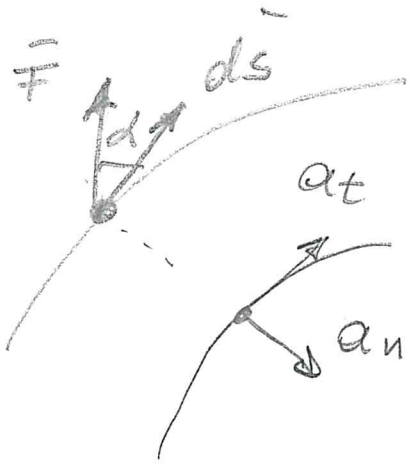
$$dL = \vec{M} \cdot d\vec{\vartheta}$$

$$L_{12} = \int_{\vartheta_1}^{\vartheta_2} M \cdot d\vartheta = \int_{\vartheta_1}^{\vartheta_2} M_t\, d\vartheta$$

·) Lavoro Ris. Forze Esterne $\bar{F}$

$$\vec{a} = \frac{\bar{F}}{m}$$

$$\bar{F} = m\bar{a}$$



$$dL = \vec{F} \cdot d\vec{s} = m\vec{a} \cdot d\vec{s} =$$

$$= m\bar{a}\cos\alpha \cdot ds = m a_t ds$$

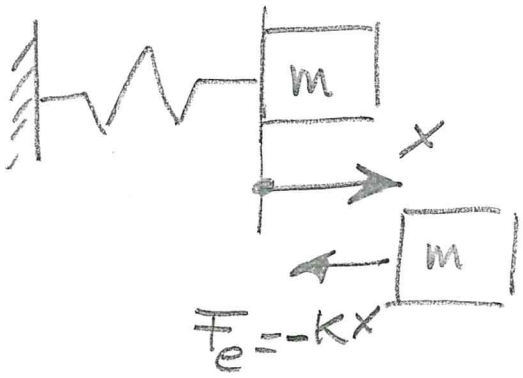
$$a_t ds = \frac{dV}{dt} ds = \frac{dV \cdot ds}{dt} = V dV$$

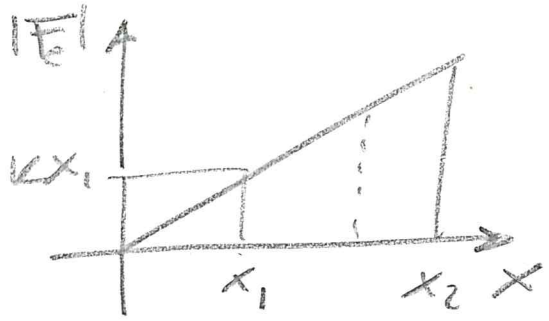
$$dL = m V dV$$

$$L = \int_{V_1}^{V_2} m V dV = m \int_{V_1}^{V_2} V dV = m \frac{1}{2} V^2 \Big]_{V_1}^{2} =$$

$$= \frac{1}{2} m \left(V_2^2 - V_1^2\right)$$

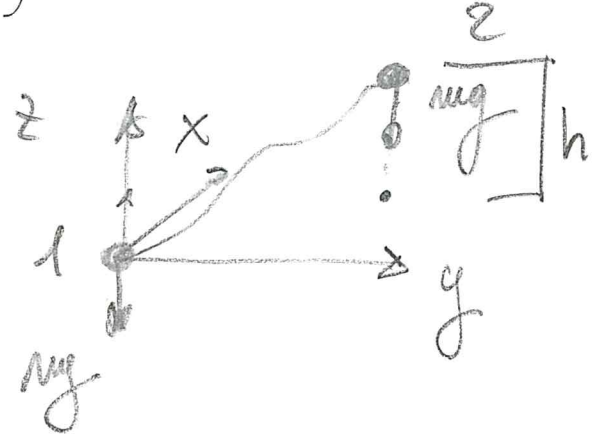
a) LAVORO FORZA $f(x)$





$$L = \int_1^2 F \cdot ds = -\int_1^2 kx\,dx = -\frac{1}{2}k(x_2^2 - x_1^2)$$

b) LAVORO FORZA PESO



$$d\bar{s} = dx\vec{i} + dy\vec{j} + dz\vec{k}$$

$$m\bar{g} = mg(-\vec{k})$$

$$L = \int_1^2 m\bar{g} \cdot d\bar{s} =$$

$$= \int_1^2 -mg\,dz = -mg\int_1^2 dz =$$

$$= -mgh$$

EN CIN $\frac{1}{2} m (v_2^2 - v_1^2)$

EN POT EL $\frac{1}{2} k (x_2^2 - x_1^2)$

EN POT GRAV $mg(z_2 - z_1)$

$$L_e + L_i = \Delta E_c + \Delta E_g + \Delta E_k + \dots$$

$L_e + L_i$: PERCORSO, GRANDEZZE DI LINEA

$\Delta E_c + \Delta E_g + \Delta E_k + \dots$: GRANDEZZE DI STATO