

Q, d FISSI
 $b = 0,1 \text{ m}$ $\beta = 90^\circ$ $\dot{\beta} = -1 \text{ rad/s}$ $\ddot{\beta} = 0$
 $c = \dots$ $\delta = 90^\circ$
 $\dot{\gamma} = \omega_{mixe}$ $\ddot{\gamma} = \dot{\omega}_{mixe}$
 $d = 0,1 \text{ m}$ $\delta = 30^\circ$

$$\begin{cases} a + b \cos \beta = c \cos \delta + d \cos \delta \\ b \sin \beta = c \sin \delta + d \sin \delta \end{cases} \Rightarrow c = R_0 = 0,05 \text{ m}$$

$$\begin{cases} -b \dot{\beta}^2 \sin \beta = -c \ddot{\gamma} \sin \gamma - d \ddot{\delta} \sin \delta \\ b \dot{\beta} \cos \beta = c \ddot{\gamma} \cos \gamma + d \ddot{\delta} \cos \delta \end{cases} \quad \begin{vmatrix} -c \sin \delta & -d \sin \delta \\ c \cos \delta & d \cos \delta \end{vmatrix} \cdot \begin{vmatrix} \ddot{\gamma} \\ \ddot{\delta} \end{vmatrix} = \begin{vmatrix} -b \dot{\beta}^2 \sin \beta \\ b \dot{\beta} \cos \beta \end{vmatrix}$$

$$\begin{vmatrix} -0,05 & -0,05 \\ 0 & 0,08 \end{vmatrix} \cdot \begin{vmatrix} \ddot{\gamma} \\ \ddot{\delta} \end{vmatrix} = \begin{vmatrix} 0,1 \\ 0 \end{vmatrix} \Rightarrow \begin{cases} \ddot{\gamma} = -2 \text{ rad/s}^2 \\ \ddot{\delta} = 0 \end{cases}$$

$$\begin{cases} -b \dot{\beta}^2 \cos \beta = -c \ddot{\gamma} \cos \gamma - c \dot{\gamma}^2 \sin \gamma - d \ddot{\delta} \cos \delta \\ -b \dot{\beta}^2 \sin \beta = c \ddot{\gamma} \sin \gamma - c \dot{\gamma}^2 \sin \gamma - d \ddot{\delta} \sin \delta \end{cases} \quad \begin{vmatrix} -0,05 & -0,05 \\ 0 & 0,08 \end{vmatrix} \cdot \begin{vmatrix} \ddot{\gamma} \\ \ddot{\delta} \end{vmatrix} = \begin{vmatrix} 0 \\ 0,1 \end{vmatrix} \Rightarrow \begin{cases} \ddot{\gamma} = -1,25 \text{ rad/s}^2 \\ \ddot{\delta} = 1,25 \text{ rad/s}^2 \end{cases}$$

$$\vec{v}_M = \vec{v}_C = \vec{v}_0 + \dot{\gamma} \hat{k} \times R_0 \hat{s} = (0,1 \hat{x}) \text{ m/s} \quad \vec{a}_M = \vec{a}_C^{(0)} = \vec{a}_0 + \ddot{\gamma} \hat{k} \times R_0 \hat{s} = (0,0625 \hat{x}) \text{ m/s}^2$$

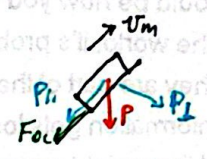
$$\vec{v}_C = -\omega \hat{k} \times \frac{1}{2} \hat{s} = (0,05 \hat{x}) \text{ m/s} \quad \vec{a}_C = 0$$

d BILANCO DI POTENZA: $\frac{d}{dt} K = \Sigma P$

$$\frac{d}{dt} K = M \dot{\gamma} \alpha_C + \tau \dot{\omega} + \tau_0 \dot{\gamma} + m v_m \alpha_m = 0,313 \text{ W}$$

$$\Sigma P = C_m \dot{\gamma} + m \vec{g} \cdot \vec{v}_C - m g v_m \sin(45^\circ) - \frac{1}{2} m g v_m \cos(45^\circ)$$

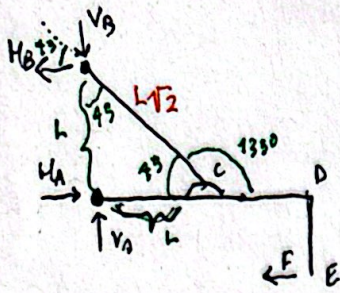
$$\Rightarrow C_m = 8,64 \text{ NM}$$



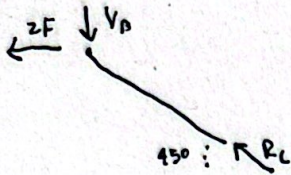
Question:
 We are working on a new project, and we are working with people who are located all over the world. But the project is behind schedule and is over budget. No one working on the project is happy, or seems to know exactly what is happening. There are always too many emails every day. Does anyone have the same problem? Can anyone help us figure out the main problem and find a solution?

- Vocabulary
- activate
 - disappoint
 - mention
 - argue
 - genius
 - overwhelm
 - click
 - inker
 - connect
 - icon
 - contact
 - incident
 - knowledge
 - false
 - struggle

$$\eta = 3 \cdot 2 - (2A + 2B + 2C) = 0$$

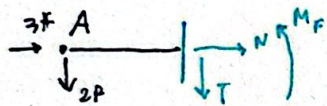
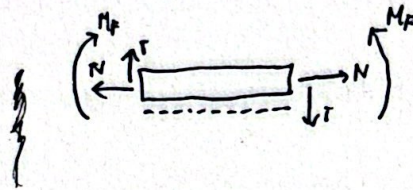
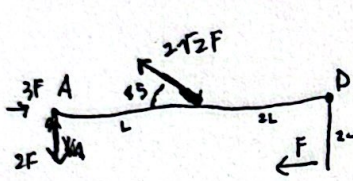


$$\begin{cases} H_A - H_B - F = 0 \\ V_A - V_B = 0 \\ H_A L - 3FL = 0 \end{cases} \quad \begin{matrix} H_B = 2F \\ V_B = -2F \\ H_A = 3F \end{matrix}$$

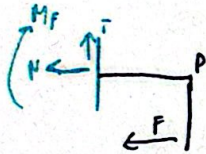


$$\begin{cases} -2F - R_C \cos(45) = 0 \\ -V_B + R_C \sin(45) = 0 \end{cases} \quad \begin{matrix} R_C = -2\sqrt{2}F \\ V_B = -2F \end{matrix}$$

$$\Rightarrow V_A = -2F$$



$$\begin{cases} N = -3F \\ T = -2F \\ M_F + 2Fx = 0 \end{cases} \quad \begin{matrix} M(0) = 0 \\ M(L) = -2FL \end{matrix}$$

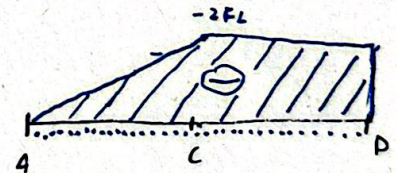
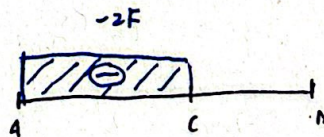
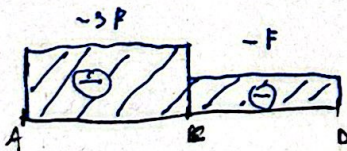


$$\begin{cases} N = -F \\ T = 0 \\ -M_F - 2LF = 0 \end{cases} \quad \begin{matrix} M_F = -2FL \end{matrix}$$

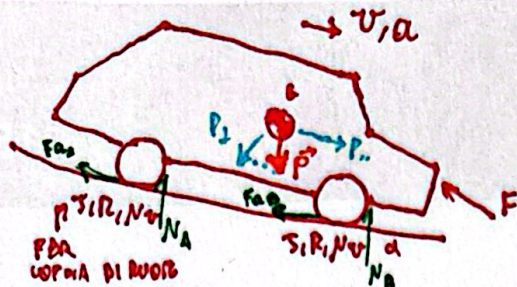
N

T

M_F



LEGAMI UMBILICI



$$W_H = \gamma W_m \quad \dot{W}_H = \gamma \dot{W}_m$$

$$v = v_H = \gamma R W_H = \gamma R W_m \quad a = \gamma R \dot{W}_m$$

$$P_1 + P_2 + P_T = 0$$

$$P_1 = C_m W_m - 5m \dot{W}_m W_m \quad P_2 = \sum P^{(i)} - \frac{d}{dt} K W$$

$$\sum P^{(i)} = (P_{11} - F_{aA} - F_{aB}) \cdot v = \gamma R (Mg \sin \alpha - \mu_0 (N_A + N_B)) \dot{W}_m = 209,5 W_m$$

$$\frac{d}{dt} K = \mu v a + 25 \dot{W}_m W_m = \gamma^2 (R^2 M + 25) \dot{W}_m W_m = 5,1 \dot{W}_m W_m$$

$$C_m W_m - 5m \dot{W}_m W_m + 209,5 W_m - 5,1 \dot{W}_m W_m + P_T = 0$$

CASO 1) REGIME C_m ?

$$C_m W_m + 209,5 W_m + P_T = 0$$

$$P_1 = C_m W_m \geq 0?$$

$$P_2 = 209,5 W_m > 0 \Rightarrow \text{MOTO RETROGRADA}$$

$$P_T = -(1 - \mu_0) \cdot 209,5 W_m$$

$$C_m W_m + 209,5 W_m - (1 - \mu_0) \cdot 209,5 W_m = 0$$

$$C_m = -141,05 \text{ Nm}$$

CASO 2) $\alpha = 3 \text{ m/s}^2$ C_m ?

$$\alpha = 3 \text{ m/s}^2 \rightarrow \dot{W}_m = 60 \text{ rad/s}^2$$

$$(C_m - 0,6) W_m + (-104,5) W_m + P_T = 0$$

$$P_1 \geq 0? \quad P_2 < 0 \Rightarrow \text{MOTO DIRETTA}$$

$$P_T = -(1 - \mu_0) (C_m - 0,6) W_m$$

$$(C_m - 0,6) W_m - 104,5 W_m - (1 - \mu_0) (C_m - 0,6) W_m = 0$$

$$C_m = 431,23 \text{ Nm}$$