

Svolgimento Scritto Meccanica Gruppo 2013

$$\textcircled{1} \quad \underbrace{\frac{1}{12} ML^2}_{I_{O, \text{grave}}} + M \underbrace{\left(\frac{L}{2}\right)^2}_{I_{O, \text{grave}}} = \underbrace{\frac{1}{3} ML^2}_{I_{O, \text{grave}}} \quad \text{H.S.}$$

② Tes Momento Angolare

$$-Mg \frac{L}{2} \sin \beta = I_O \alpha$$

$$\frac{-3MgL \sin \beta}{\cancel{2}} = \frac{2ML^2}{\cancel{2}} \alpha$$

$$-3 \sin \beta = 2L \alpha$$

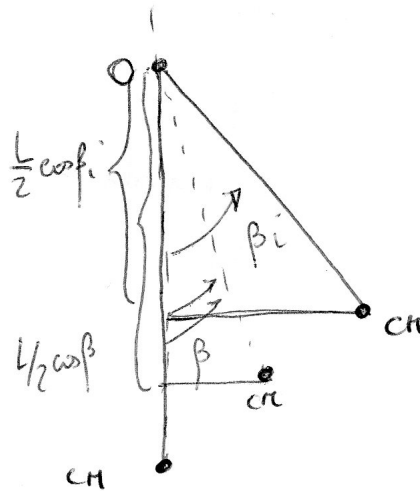
$$\alpha = \frac{-3g \sin \beta}{2L}$$

se $\sin \beta \approx \beta$

$$\ddot{\beta} = -\frac{3g}{2L} \beta \quad \text{D.A.}$$

③ Tes Lavoro Ene Cinetica

$$\omega = \sqrt{\frac{3g}{2L}}$$



$$\Delta U = U_f - U_i =$$

$$= Mg \frac{L}{2} (\cos \beta - \cos \beta_i) = \frac{1}{2} I_O \omega^2$$

$$Mg L (\cos \beta - \cos \beta_i) = I_O \omega^2$$

$$\omega^2 = \frac{Mg L (\cos \beta - \cos \beta_i)}{I_O} = \frac{Mg L (\cos \beta - \cos \beta_i)}{\frac{ML^2}{3}} =$$

$$= \frac{3Mg L (\cos \beta - \cos \beta_i)}{ML^2} = \frac{3g (\cos \beta - \cos \beta_i)}{L}$$

9) Two Moments Superposition

$$-Mg \frac{2}{3} L \sin \beta = I_0 \alpha$$

$$-2MgL \sin \beta = 3I_0 \alpha$$

$$\alpha = \frac{-2MgL \sin \beta}{3I_0}$$

10) Two Moments See Answer

$$\Delta U = \Delta K$$

$$Mg \frac{2}{3} L (\cos \beta - \cos \beta_i) = \frac{1}{2} I_0 \omega^2$$

$$4MgL (\cos \beta - \cos \beta_i) = 3I_0 \omega^2$$

$$\omega^2 = \frac{4MgL (\cos \beta - \cos \beta_i)}{3I_0}$$

Vedi

Feb 2013
Set 2012
Gen 2012

$$\vec{a} = a r \hat{r} - \omega^2 r \hat{r}$$

$$\begin{aligned}\vec{a} &= \frac{-3g \sin \beta_f}{2L} \cdot \frac{L}{2} \hat{t} - \frac{3g (\cos \beta_f - \cos \beta_i)}{L} \cdot \frac{L}{2} \hat{r} = \\ &= \frac{-3g \sin \beta_f}{4} \hat{t} - \frac{3g (\cos \beta_f - \cos \beta_i)}{2} \hat{r} = \\ &\approx -3,7 \hat{t} - 5,4 \hat{r}.\end{aligned}$$

Solo la forza - peso fa lavoro
Teo. Lev. Cin. Cinetica.

$$W_{TOT} = \int du = \int \lambda dx = \int_0^L kx dx = k \frac{L^2}{2} = 4 \text{ Kp}$$

$$x_{cm} = \frac{\int x du}{W_{TOT}} =$$

$$= \frac{\int x \lambda dx}{W_{TOT}} =$$

$$= \frac{\int kx^2 dx}{W_{TOT}} = \frac{k \frac{L^3}{3}}{W_{TOT}} =$$

$$= \frac{kL^3}{3} \cdot \frac{2}{kL^2} = \frac{2}{3} L.$$

