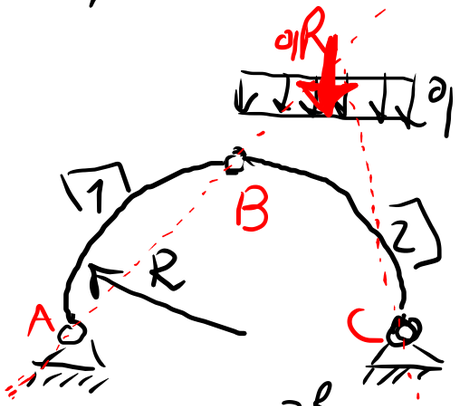
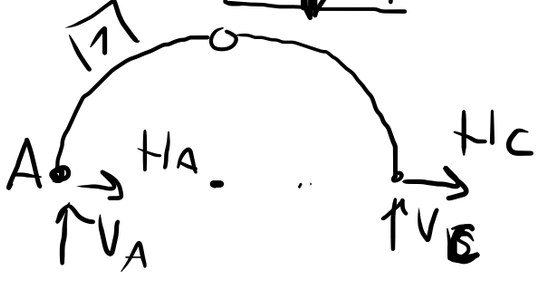
ES, STUDIO C.D.S. IN UNA STR. AD ARCO



RICERCA REAZ. VINCOLARI

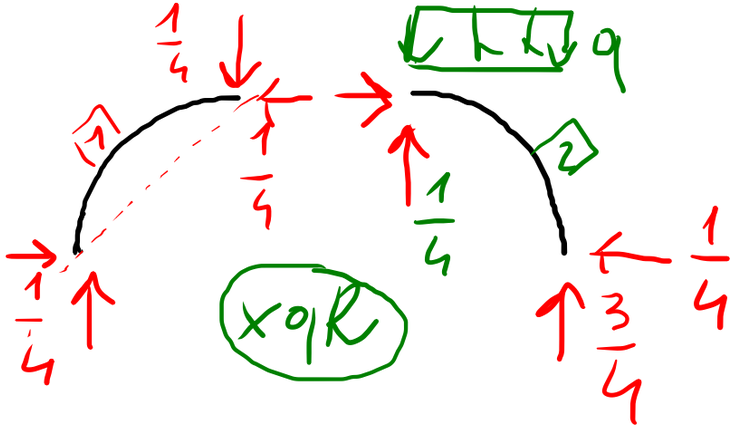
$$\left.\begin{aligned} \rightarrow &: H_A + H_C = 0 \\ +\uparrow &: V_A - qR + V_C = 0 \\ \overset{+}{\circlearrowleft}_A &: -qR \cdot \frac{3}{2}R + V_C 2R = 0 \end{aligned}\right\}$$ EQ. EQUIL. GLOBALE [1]+[2]

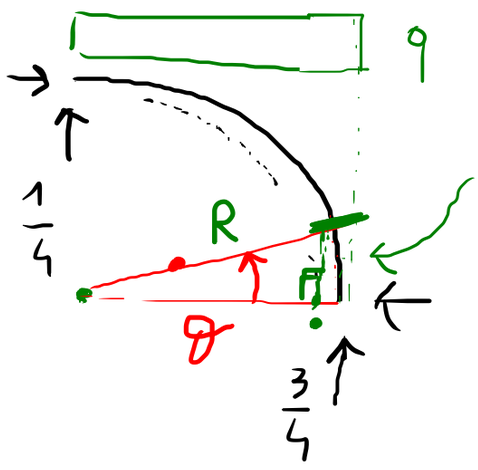
$$[1]\ \overset{+}{\circlearrowleft}_B : H_A R - V_A R = 0$$ EQ. AUS.

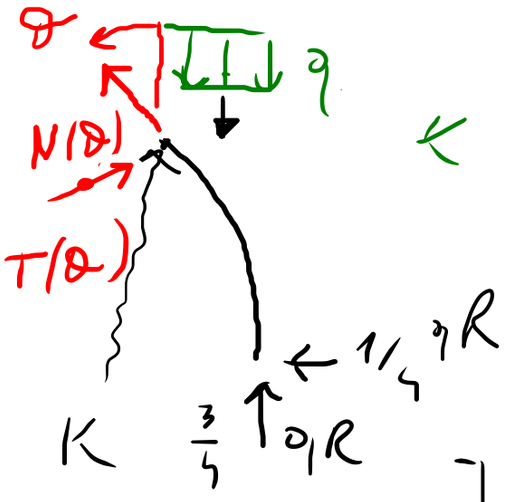


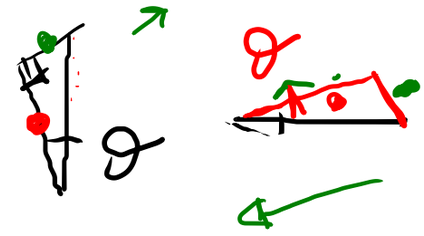
$$V_C = \frac{3}{4}qR \; ; \; V_A = +\frac{1}{4}qR \; ; \; H_A = +\frac{1}{4}qR$$

$$H_C = -H_A = -\frac{1}{4}qR$$









CALCOLO DI $N(\vartheta)$

$N(\vartheta), T(\vartheta), M(\vartheta)$

$\vartheta \in [0, \pi/2]$

$R - R\cos\vartheta$

$+\nwarrow : +N(\vartheta) - qR(1-\cos\vartheta)\cos\vartheta + \frac{3}{4}qR \cdot \cos\vartheta + \frac{1}{4}qR\sin\vartheta = 0$

$$N(\vartheta) = qR(1-\cos\vartheta) - \frac{3}{4}qR\cos\vartheta - \frac{1}{4}qR\sin\vartheta$$

$N(0) \overset{?}{=} -\frac{3}{4}qR \rightsquigarrow N(0) = qR(1-1) - \frac{3}{4}qR \cdot 1 - 0 = -\frac{3}{4}qR$ (Ok)

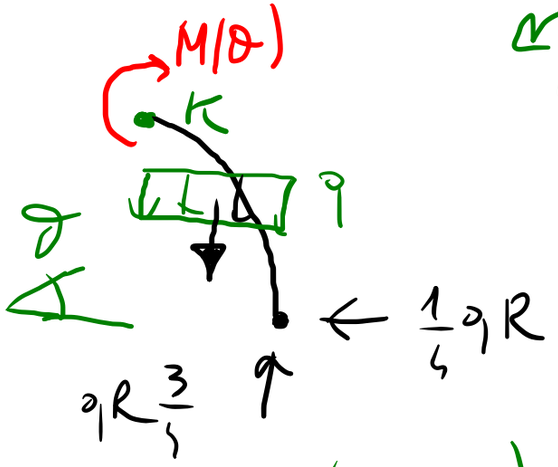
$N\left(\frac{\pi}{2}\right) \overset{?}{=} -\frac{1}{4}qR \rightsquigarrow N\left(\frac{\pi}{2}\right) =$ ---- ESERCIZIO

$+\nearrow : +T(\vartheta) - qR(1-\cos\vartheta)\sin\vartheta + \frac{3}{4}qR\sin\vartheta - \frac{1}{4}qR\cos\vartheta = 0$

$$T(\vartheta) = qR(1-\cos\vartheta)\sin\vartheta - \frac{3}{4}qR\sin\vartheta + \frac{1}{4}qR\cos\vartheta$$

$T\left(\frac{\pi}{2}\right) \overset{?}{=} +\frac{1}{4}qR$ ES.

$T(0) \overset{?}{=} \frac{1}{4}qR \rightsquigarrow T(0) = qR(0)\cdot 0 - \frac{3}{4}qR\cdot 0 + \frac{1}{4}qR\cdot 1 = \frac{1}{4}qR$ (Ok)

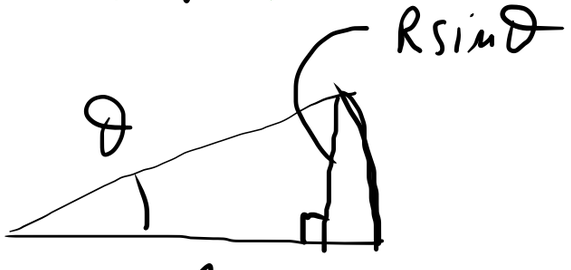


$\overset{+}{K}$: $-M(\theta) - \underbrace{qR(1-\cos\theta)}_{\text{FORZA}} \cdot \frac{R(1-\cos\theta)}{2}$

$+\frac{3}{4}qR \cdot R(1-\cos\theta) - qR\frac{1}{4} \cdot R\sin\theta = 0$

$M(\theta) = -\frac{qR^2}{2}(1-\cos\theta)^2 + \frac{3}{4}qR^2(1-\cos\theta)$

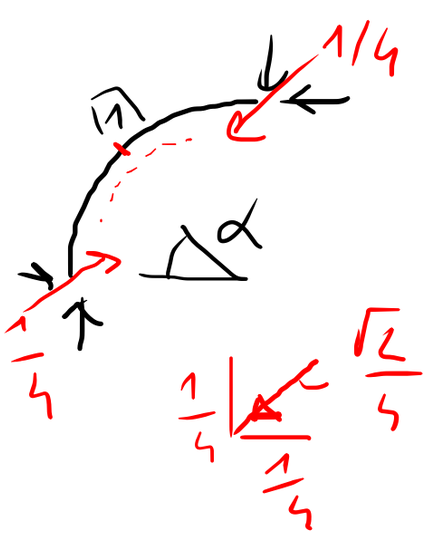
$-\frac{1}{4}qR^2\sin\theta$ $\qquad Q = qR^2$



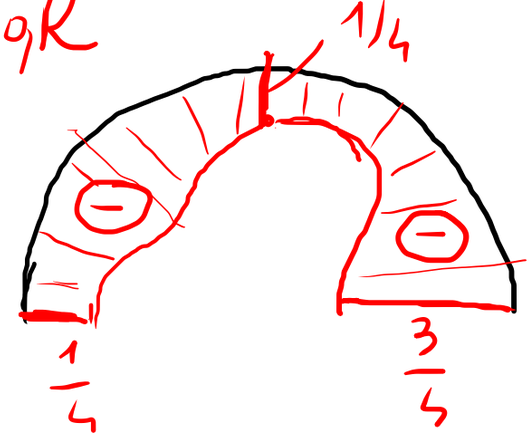
$M(0) \overset{?}{=} 0 \rightarrow M(0) = 0$

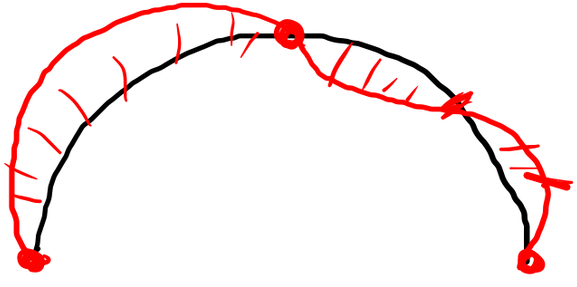
$M(\frac{\pi}{2}) \overset{?}{=} 0 \rightarrow M(\frac{\pi}{2}) = -\frac{Q}{2}(1)^2 + \frac{3}{4}Q \cdot 1 - \frac{1}{4}Q \cdot 1 =$

$= (-\frac{1}{2} + \frac{3}{4} - \frac{1}{4})Q = 0$ OK!

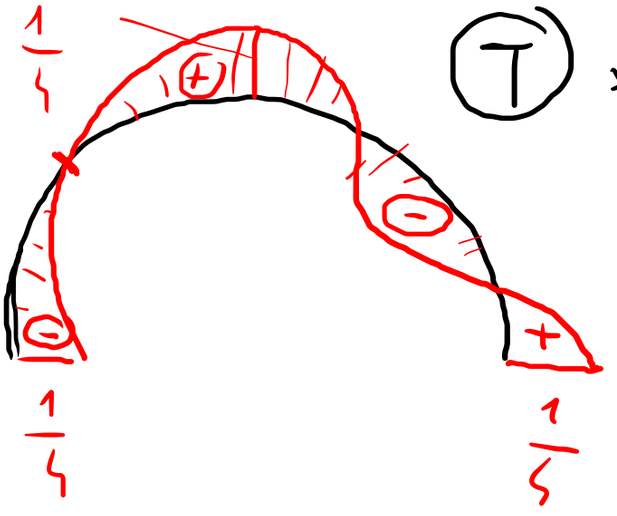


N +qR



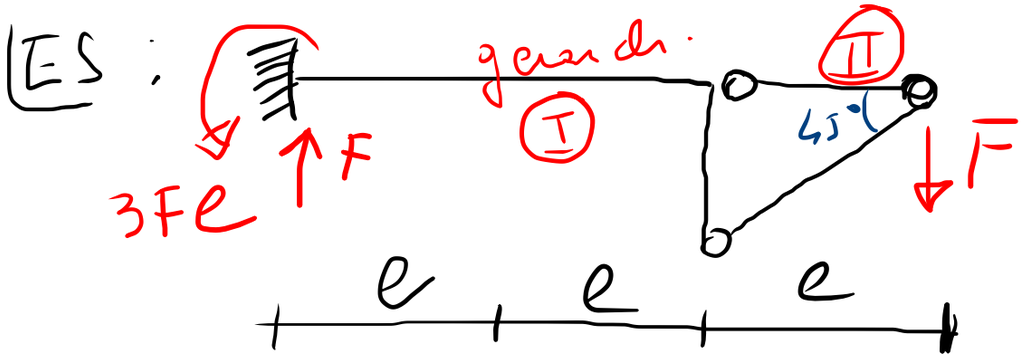


M +qR

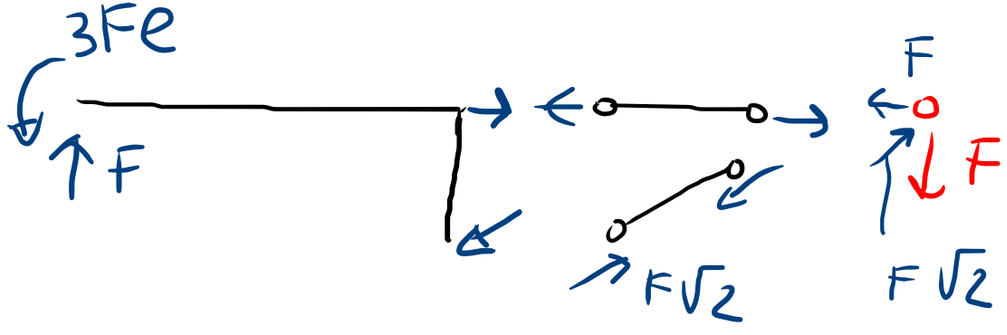


T +qR

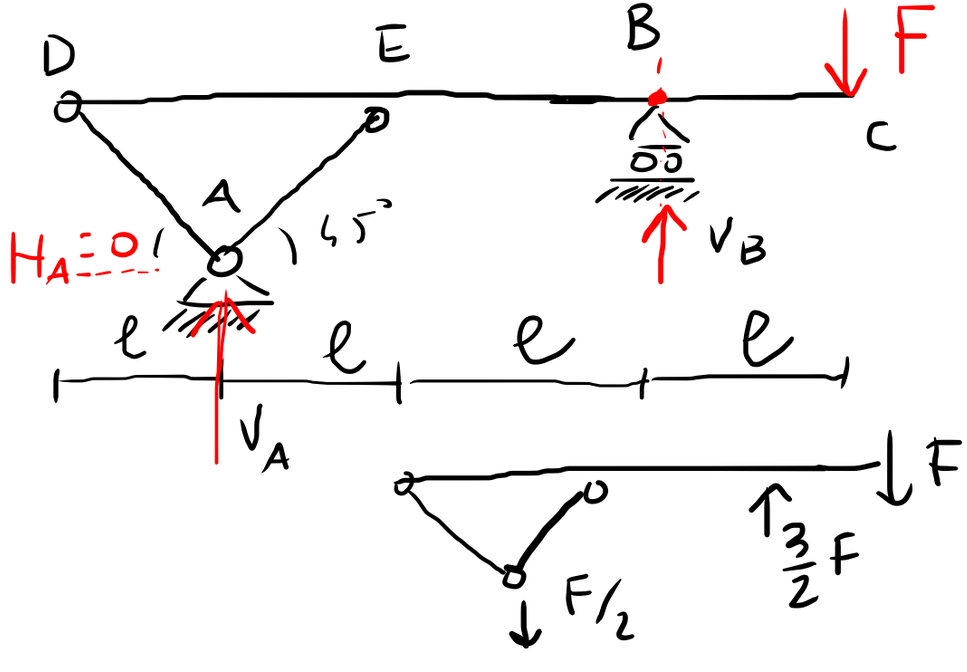
ES:



3 gdl NEL PIANO



ES

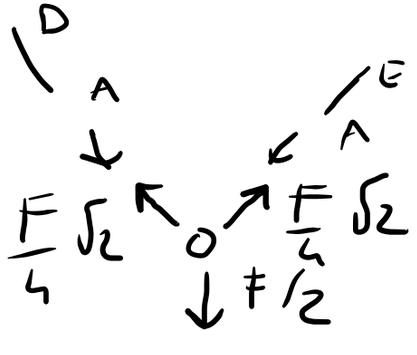


$V_A = \rightarrow \frac{F}{2}$

V_A? : (B) : $-V_A 2\ell + F\ell = 0$

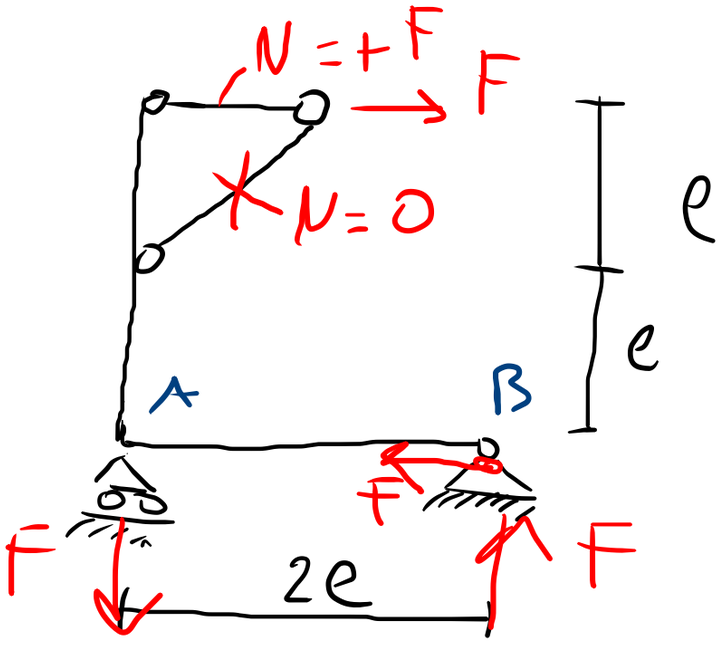
V_B? : (A) : $V_B 2\ell - F3\ell = 0$

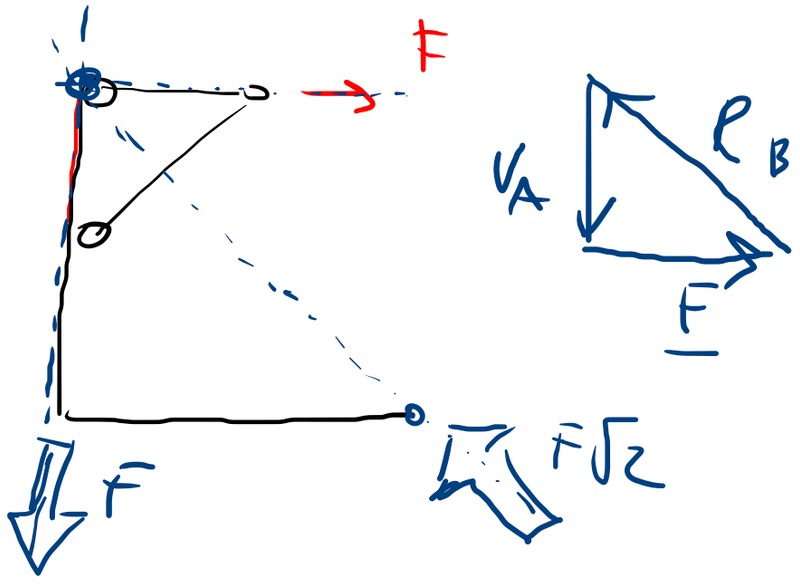
$V_B = \frac{3}{2}F$



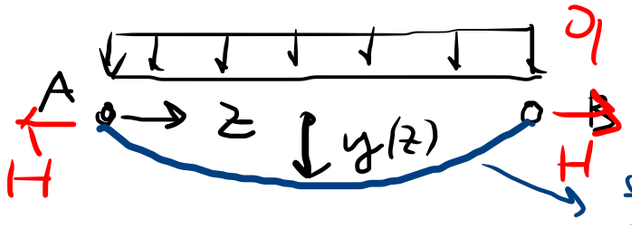
$N_{AD} = +\frac{F}{4}\sqrt{2}$

$N_{AE} = +\frac{F}{4}\sqrt{2}$


N = +F
F
N = 0
e
e
A
B
F
F
F
2e


F
F
F√2
V_A
V_B
F

STRUTTURE FUNICOLARI DEL CARICO



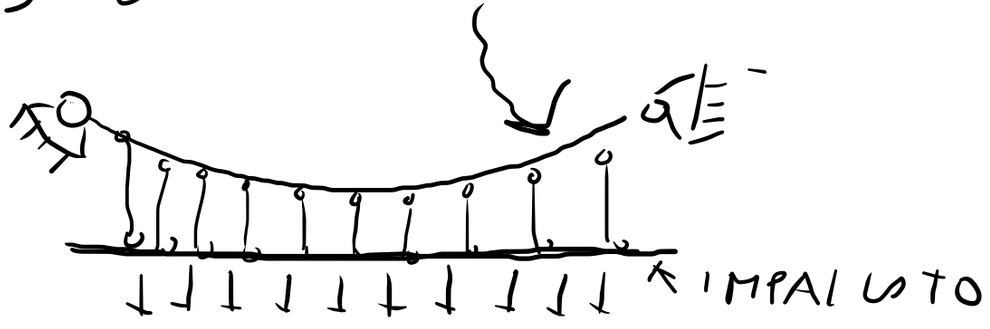
TRASURO PESO PROPRIO

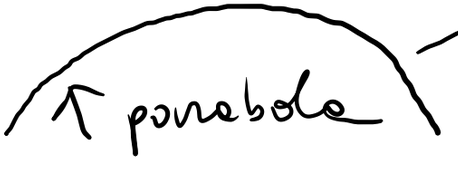
(FUNE INESTENSIBILE)

SOLO TRAZIONE ; H: TIRO DELLA FUNE

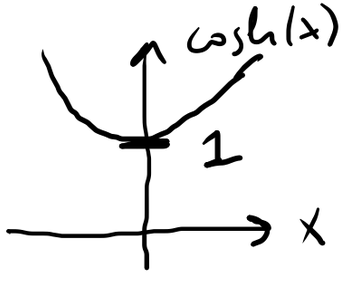
$$y''(z) = \frac{q}{H} \Big\} \text{COST.} \longrightarrow y(z) : \text{PARABOLA}$$

→ PONTI SOSPESI



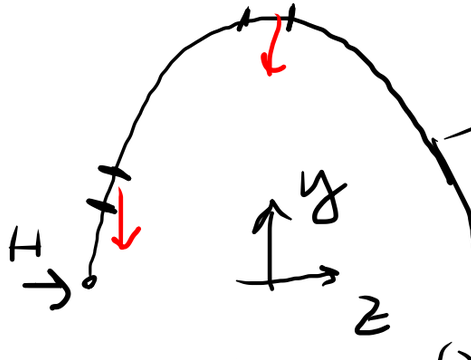


→ SF NORM. ∅ {T, M = 0



γ: peso per unità di lunghezza

CARICO : peso proprio



CATENARIA

$$y(z) = -\frac{H}{\gamma} \cosh\left(\frac{\gamma}{H} z - C_1\right) + C_2$$