SCHEMA 0 SOLUZIONE QUALITATIVA

REAZIONI VINCOLARI

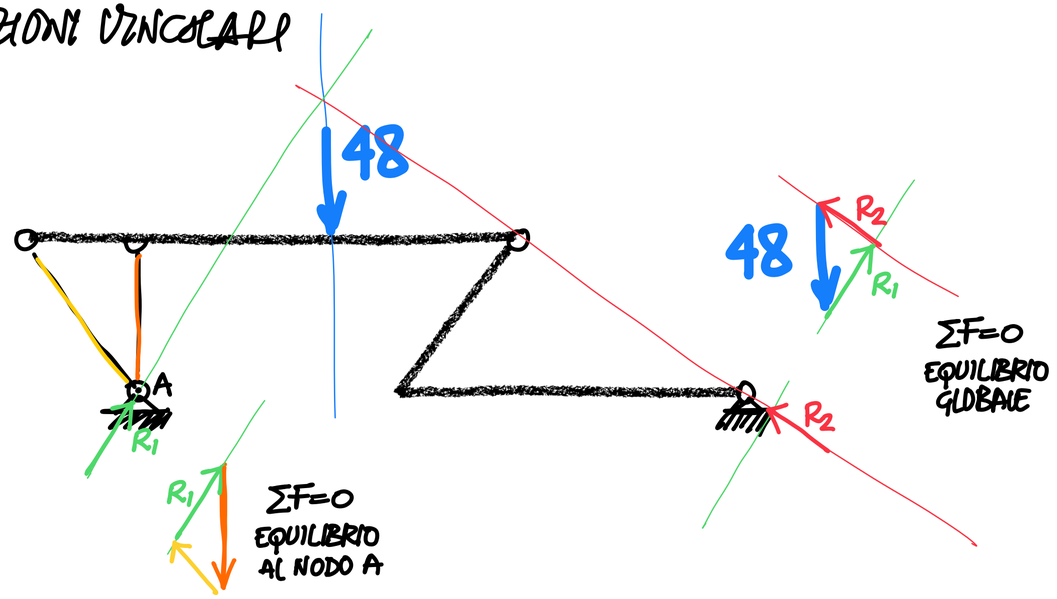
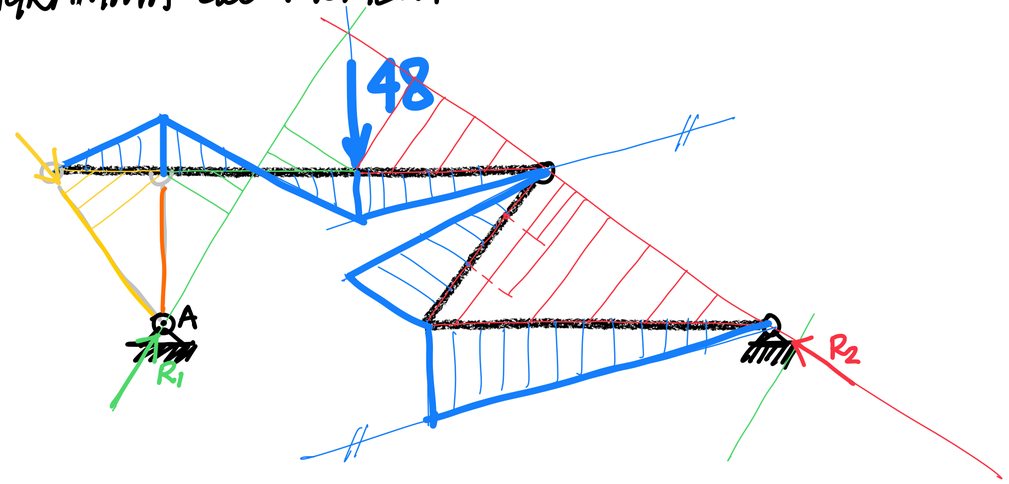


DIAGRAMMA del MOMENTO



SCHEMA X SOLUZIONE QUALITATIVA

REAZIONI VINCOLARI

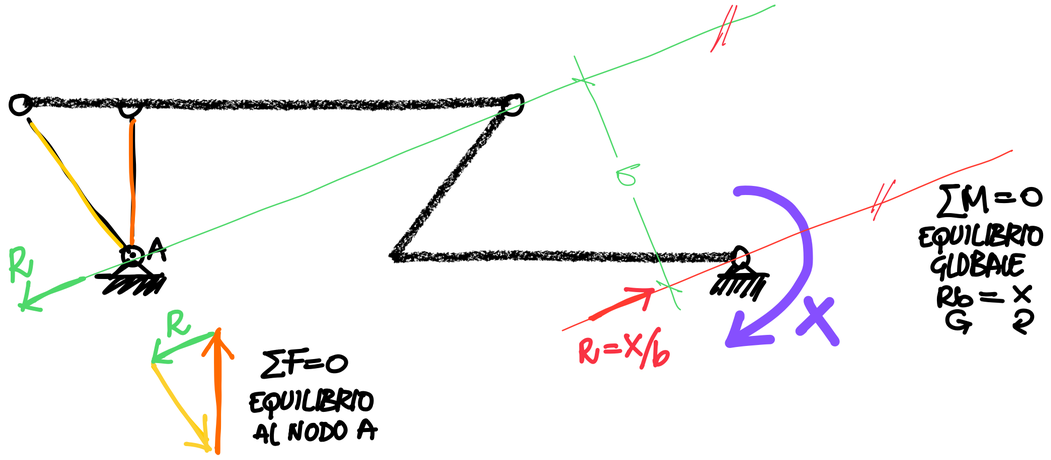
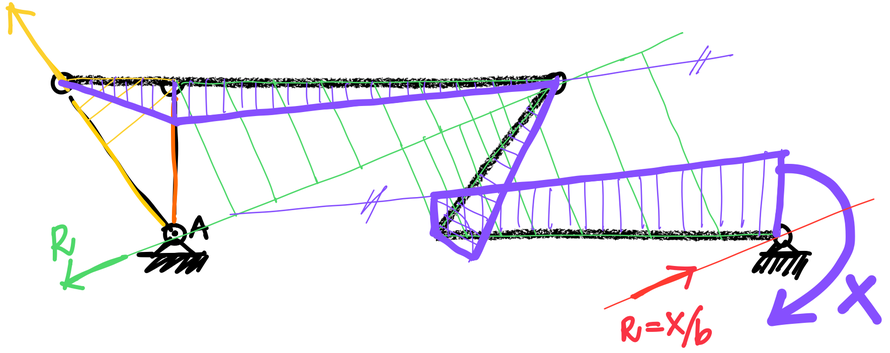
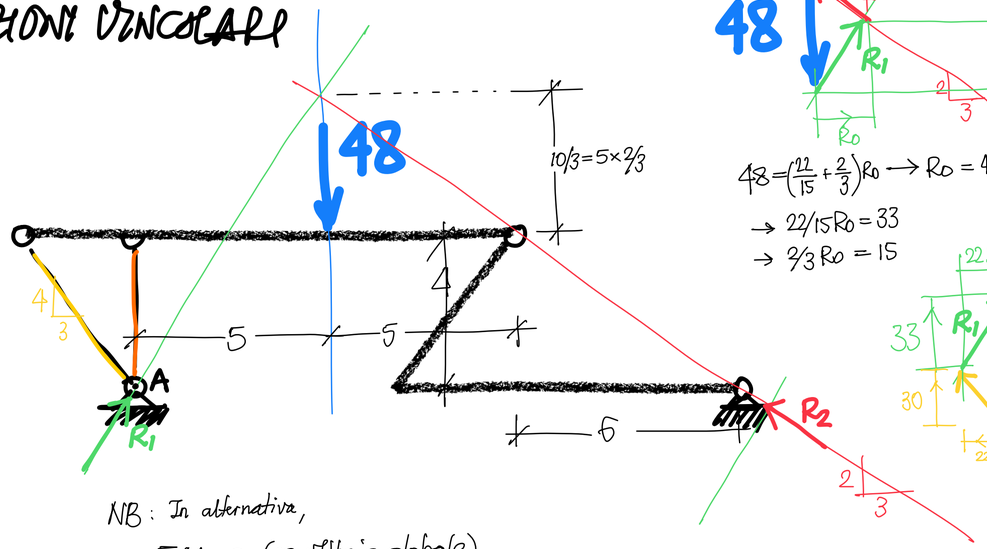


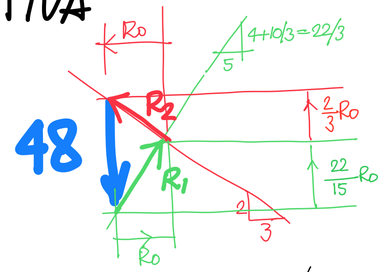
DIAGRAMMA del MOMENTO



SCHEMA 0 SOLUZIONE QUANTITATIVA

REAZIONI VINCOLARI

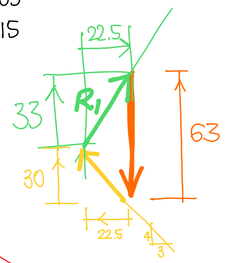




$48 = \left(\frac{22}{15} + \frac{2}{3}\right) R_0 \rightarrow R_0 = 45/2 = 22.5$

$\rightarrow 22/15 R_0 = 33$

$\rightarrow 2/3 R_0 = 15$



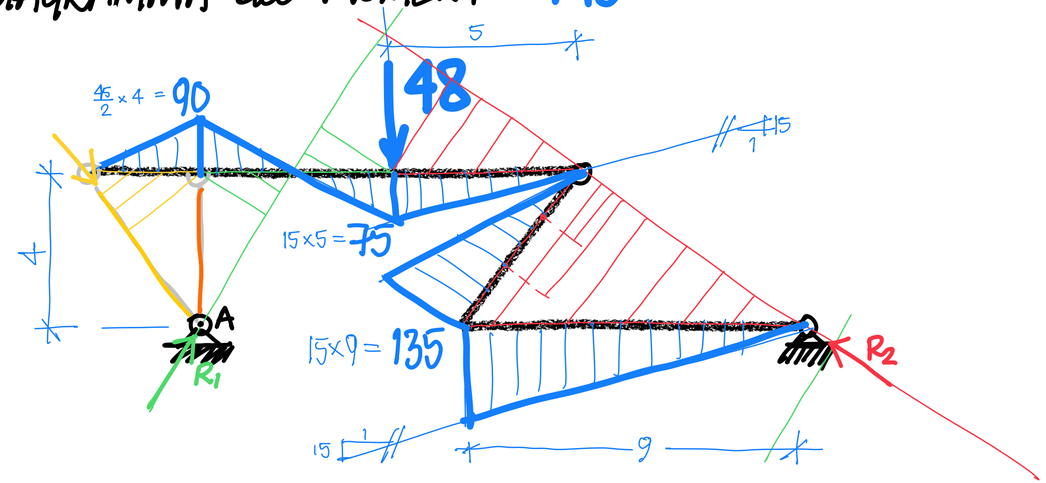
NB: In alternativa,

$\sum_A M = 0$ (equilibrio globale)

$R_{2V} \times 16 = 48 \times 5 \rightarrow R_{2V} = 15$

(↺ 2)

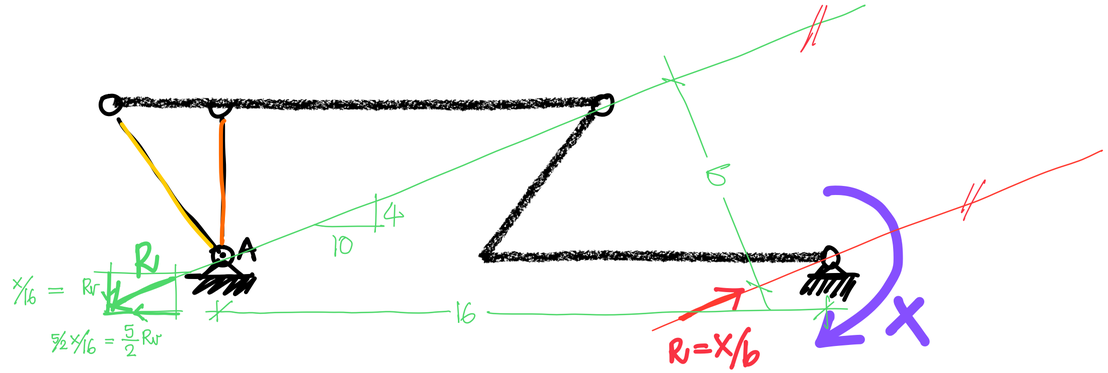
DIAGRAMMA del MOMENTO M_0



SCHEMA X SOLUZIONE QUANTITATIVA

REAZIONI VINCOLARI

$\sum M = 0$ EQUILIBRIO GLOBALE : $R_{2V} \times 16 = X \rightarrow R_{2V} = X/16$ (↺ G, 2)



$\sum F = 0$ EQUILIBRIO AL NODO A

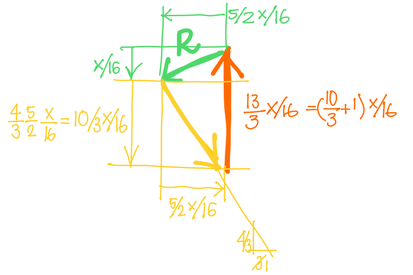
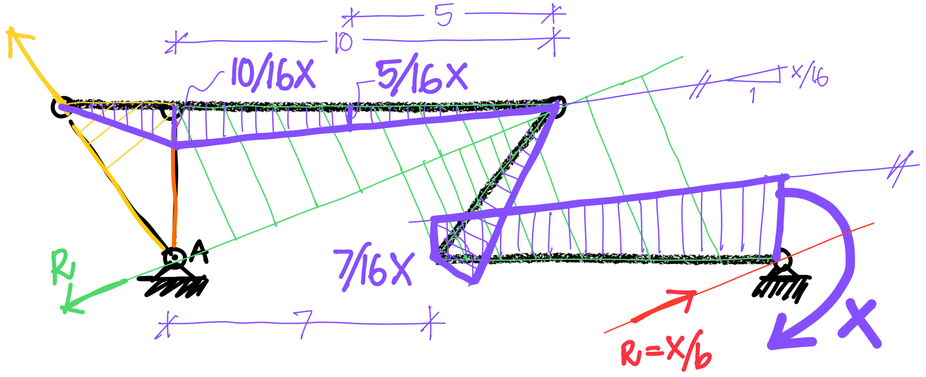
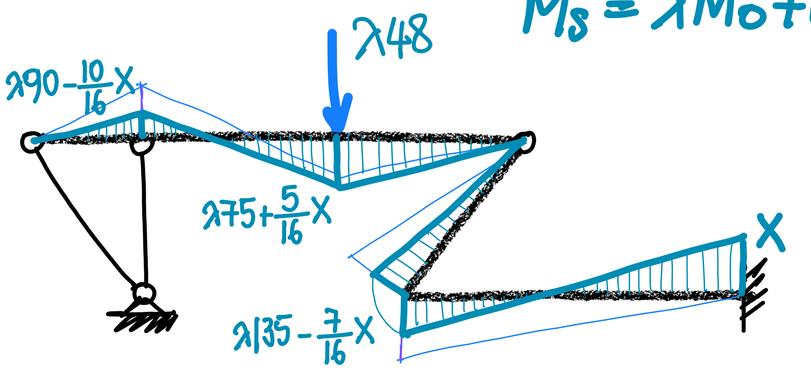


DIAGRAMMA del MOMENTO M_X



APPROCCIO STATICO

$$M_S = \lambda M_0 + M_X$$



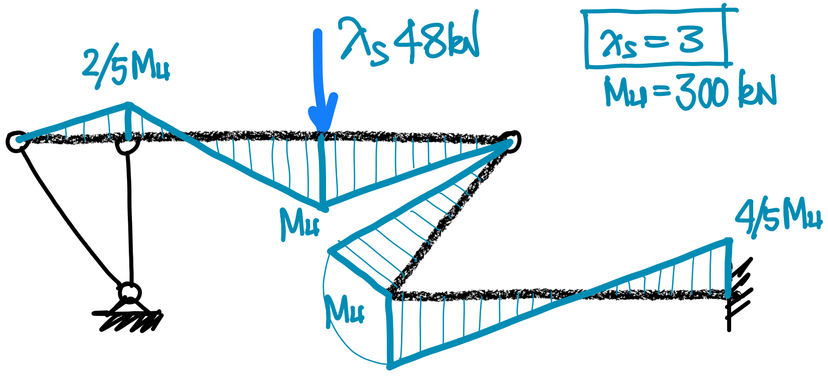
* ipotesi 1 : $X = 0$

$\rightarrow \lambda_S 135 = M_u = 300 \rightarrow \lambda_S = 300/135 = 20/9 \simeq 2.22$

* ipotesi 2 : $X \neq 0$

$$\rightarrow \begin{cases} \lambda_S 75 + 5/16 X = M_u \\ \lambda_S 135 - 7/16 X = M_u \end{cases} \rightarrow \boxed{\lambda_S = 3} \quad (X = 240 = 4/5 M_u)$$

verifica : $\lambda_S 90 - 10/16 X = 120 = 2/5 M_u < M_u$



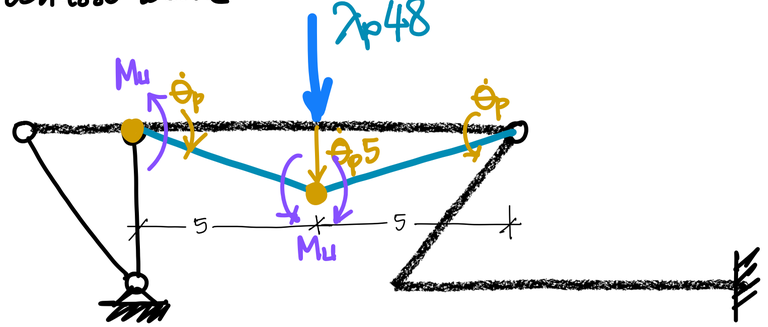
$\lambda_S = 3$

$M_u = 300$ kN

$$\boxed{\lambda_S = \lambda_p = 3 = \lambda_C}$$

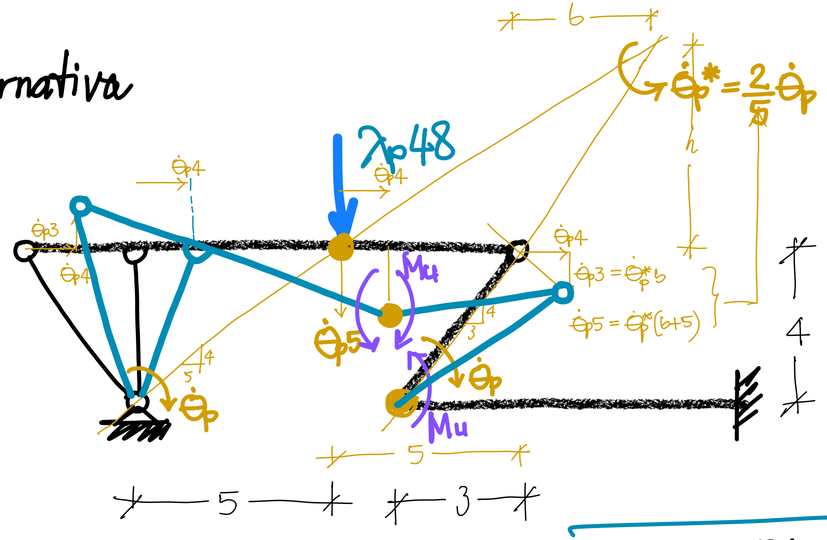
APPROCCIO CINEMATICO

* ipotesi di collasso locale



$$P = \lambda_p 48 \dot{\theta}_p 5 - (M_u \dot{\theta}_p + M_u 2\dot{\theta}_p) = 0 \rightarrow \lambda_p = \frac{M_u 3 \dot{\theta}_p}{48 \dot{\theta}_p 5} = 3.75$$

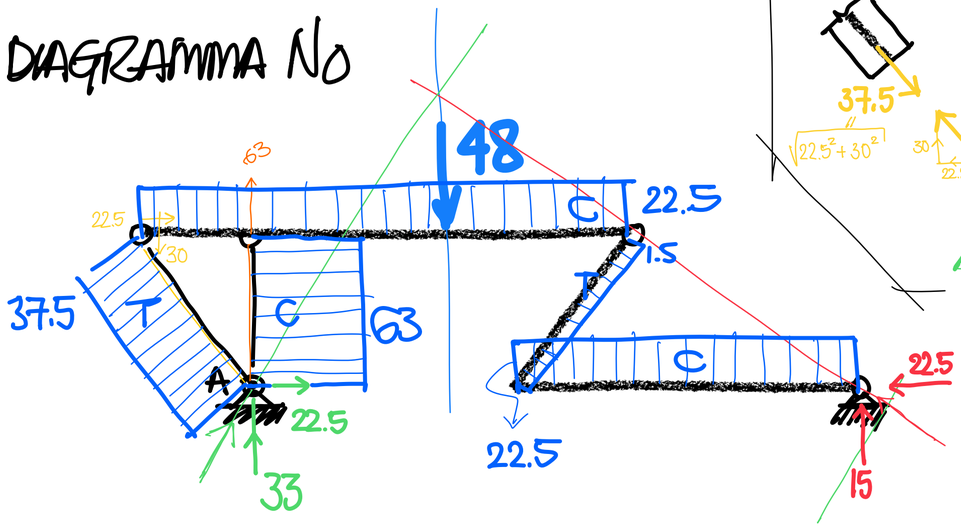
* ipotesi alternativa



$$P = \lambda_p 48 \dot{\theta}_p 5 - \left(M_u \dot{\theta}_p + M_u \left(\dot{\theta}_p + \frac{2}{5}\dot{\theta}_p\right)\right) = 0 \rightarrow \boxed{\lambda_p = \frac{M_u 12/5 \dot{\theta}_p}{48 \dot{\theta}_p 5} = 3}$$

SCHEMA 0

DIAGRAMMA N0



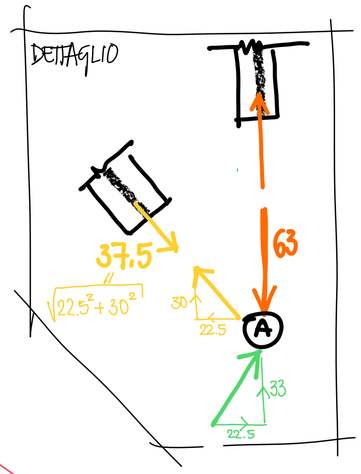
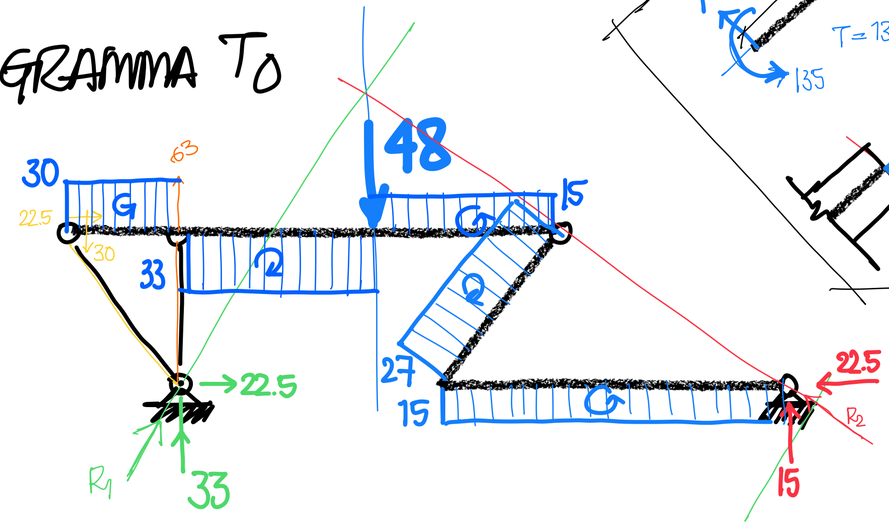
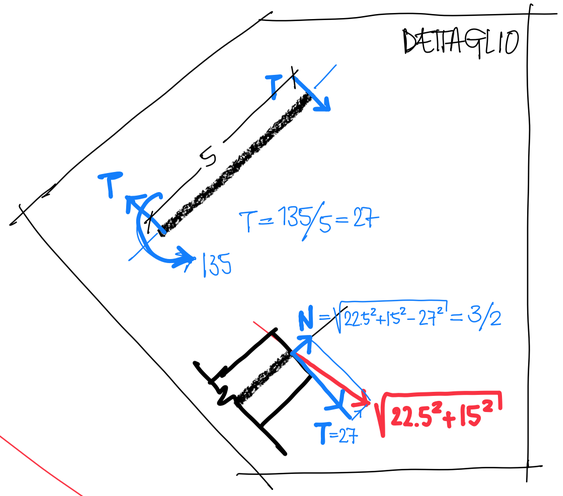


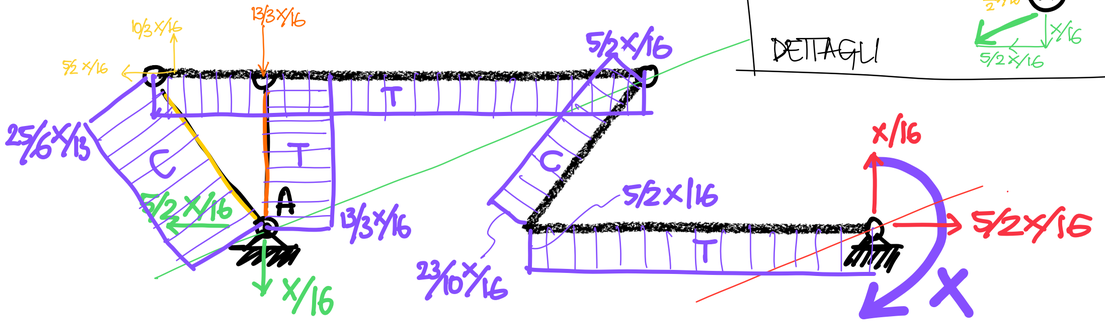
DIAGRAMMA T0





SCHEMA X

DIAGRAMMA Nx



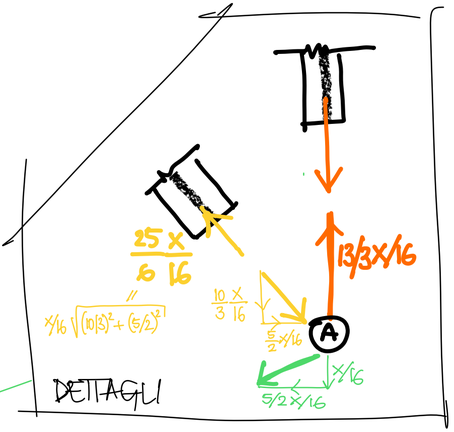


DIAGRAMMA Tx