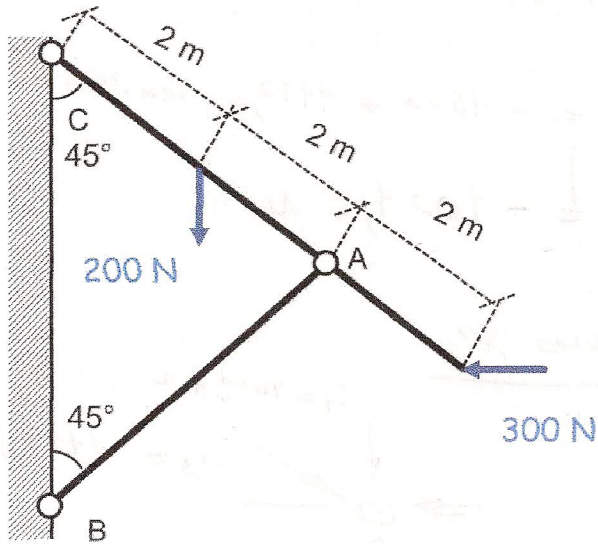


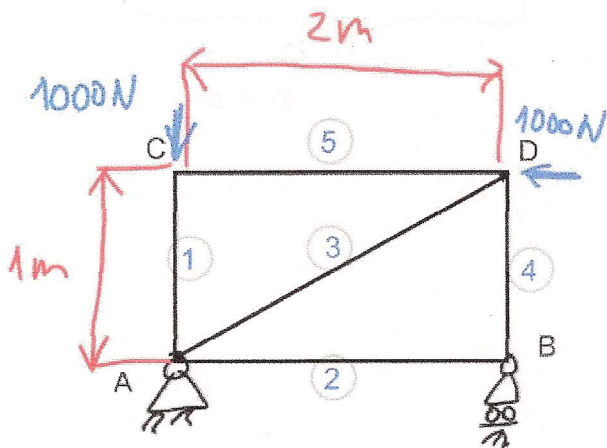
1) Calcolare lo sforzo nell'asta scarica e le reazioni vincolari

Sforzo asta AB [N] =		
RBX [N] =		
RBY [N] =		
RCY [N] =		
RCX [N] =		



2) Calcolare gli sforzi nelle aste e dire se sono tiranti o puntone

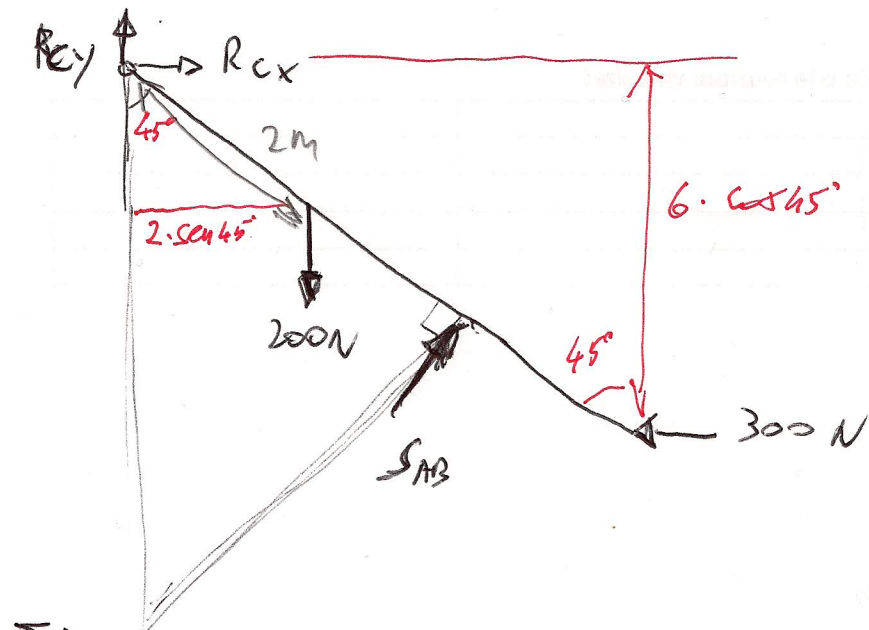
asta	Tipologia: TIRANTE/PUNTONE	Sforzo [N]
1		
2		
3		
4		
5		



ESERCIZIO ①

①

1) TAGLIO PER TROVARE LO SFORZO SULL'ASTA AB:



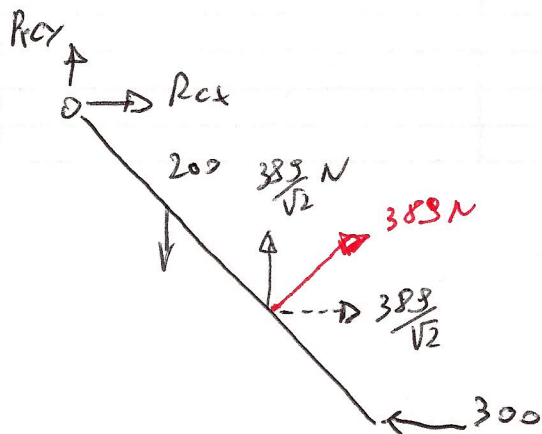
$$\sum M_C = 0$$

$$2 \cdot \sin 45^\circ \cdot 200 + 300 \cdot 6 \cdot \cos 45^\circ - S_{AB} \cdot 4 = 0$$

$$2 \cdot \frac{\sqrt{2}}{2} \cdot 200 + 300 \cdot 6 \cdot \frac{\sqrt{2}}{2} - 4 S_{AB} = 0$$

$$1555,6 = 4 S_{AB} \Rightarrow S_{AB} = \frac{1555,6}{4} \approx 389 \text{ N}$$

2) CERCO LE REAZIONI VINCULARI SUL PUNTO "C"



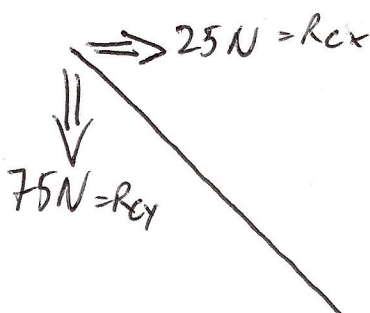
$$\sum F_x = 0 \quad R_{cx} + \frac{389}{\sqrt{2}} - 300 = 0$$

$$\sum F_y = 0 \quad R_{cy} - 200 + \frac{389}{\sqrt{2}} = 0$$

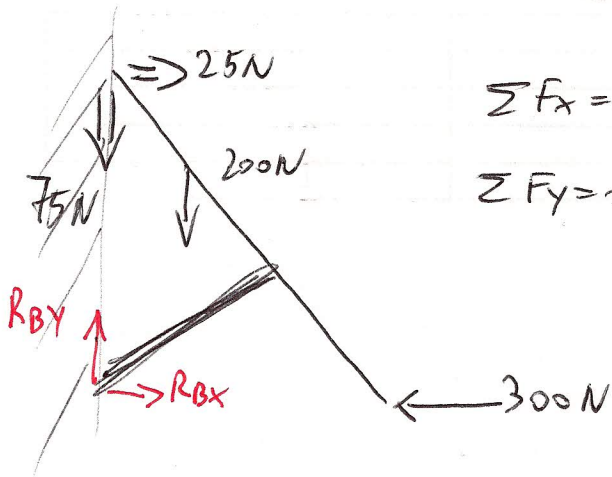
$$R_{cx} = 24,9 \approx 25 \text{ N}$$

$$R_{cy} = -75,06 \approx -75 \text{ N}$$

QUINDI NETTO IL VERSO CORRETTO ALLE REAZIONI VINCULARI



3) CALCOLO LE REAZIONI VINCULARI SUL VINCULO "B"



$$\sum F_x = 0 \quad 25 + R_{Bx} - 300 = 0$$

$$\sum F_y = 0 \quad -75 - 200 + R_{By} = 0$$

$$R_{Bx} = 275 \text{ N}$$

$$R_{By} = 275 \text{ N}$$

$$S_{AB} = 383 \text{ N}$$

$$R_{Bx} = 275 \text{ N}$$

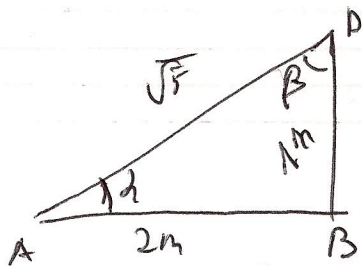
$$R_{By} = 275 \text{ N}$$

$$R_{Cx} = 25 \text{ N}$$

$$R_{Cy} = -75 \text{ N}$$

ESERCIZIO 2

Per prima cosa mi ricavo gli angoli:



$$AD = \sqrt{2^2 + 1^2} = \sqrt{5}$$

$$AB = AD \cdot \cos \alpha$$

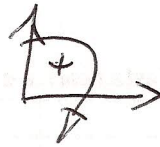
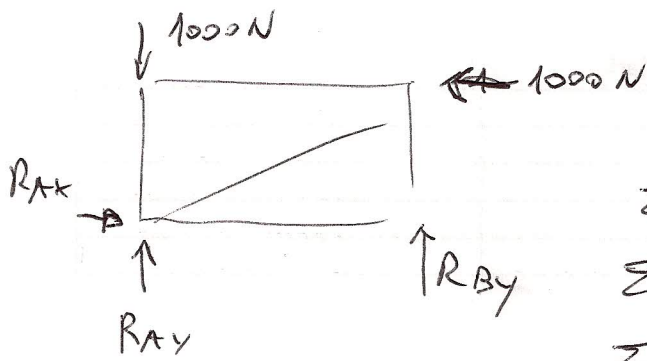
$$2 = \sqrt{5} \cdot \cos \alpha \Rightarrow \alpha = \arccos \left(\frac{2}{\sqrt{5}} \right)$$

$$= 26,5$$

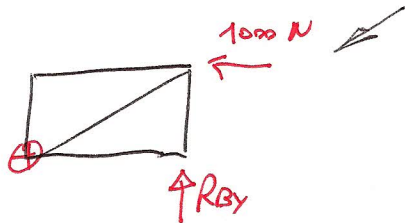
$$\beta = 180 - 90 - 26,5 = 63,5$$

CALCOLO DELLE REAZIONI VINCOLARI

3



$$\begin{aligned} \sum F_x = 0 & \quad R_{Ax} - 1000 = 0 \\ \sum F_y = 0 & \quad R_{Ay} + R_{By} - 1000 = 0 \\ \sum M_A = 0 & \quad -R_{By} \cdot 2 - 1000 \cdot 1 = 0 \end{aligned}$$



$$R_{By} = -\frac{1000}{2} = -500 \text{ N}$$

$$R_{Ay} + (-500) - 1000 = 0$$

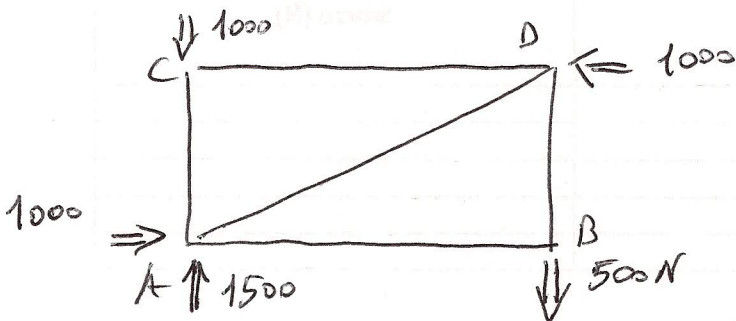
$$R_{Ax} = 1000 \text{ N}$$

$$R_{By} = -500 \text{ N}$$

$$R_{Ay} = 1500 \text{ N}$$

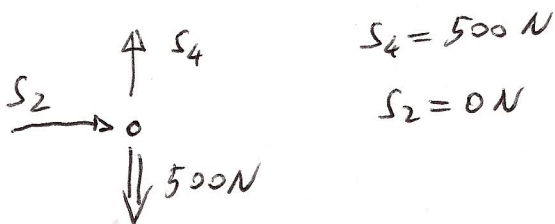
$$R_{Ax} = 1000 \text{ N}$$

DISEGNO IL SISTEMA CON LE FORZE CORRETTE



PARTE DEL NODO "B" PERCHE' HO 2 SOLE INCOGNITE:

NODO "B"

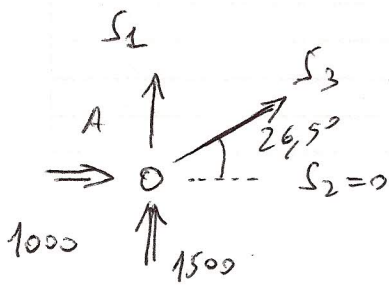


$$S_4 = 500 \text{ N}$$

$$S_2 = 0 \text{ N}$$

Nº 20 "A"

4



$$\sum F_x = 0 \quad 1000 + S_3 \cos 26,5 = 0$$

$$S_3 = - \frac{1000}{\cos 26,5} \approx -1117,4 \text{ N}$$

$$\sum F_y = 0 \quad S_1 + S_3 \sin 26,5 + 1500 = 0$$

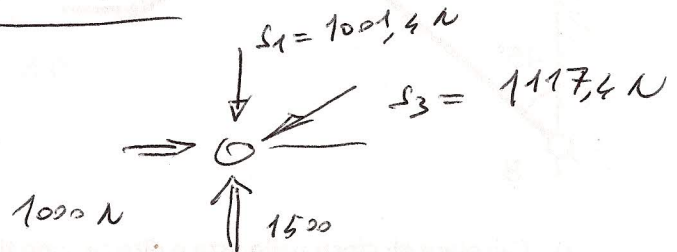
$$S_1 = -1500 + 1117,4 \cdot \sin 26,5$$

$$\underline{\underline{= -1001,4 \text{ N}}}$$

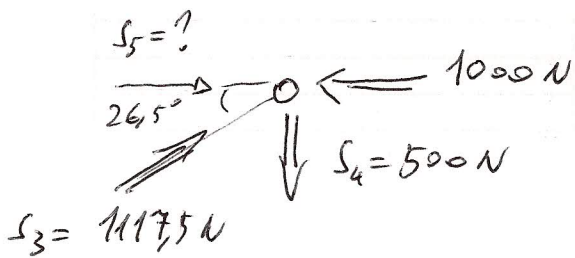
$$S_3 = -1117,4 \text{ N}$$

$$S_1 = -1001,4 \text{ N}$$

Nº 20 "A"



Nº 20 "B"



$$\sum F_x = 0 \quad S_5 + 1117,5 \cdot \cos 26,5 - 1000 = 0$$

$$S_5 + 0 = 0 \quad \Rightarrow S_5 = 0$$

$$\sum F_y = 0 \quad 1117,5 \cdot \sin 26,5 - 500 = 0$$

$$0$$

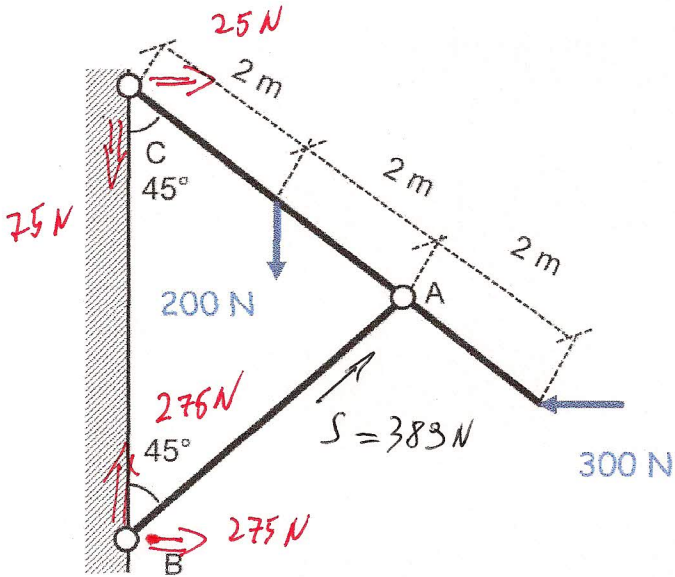
$$0 = 0$$

$$\boxed{S_5 = 0}$$



1) Calcolare lo sforzo nell'asta scarica e le reazioni vincolari

Sforzo asta AB [N] =	389 N	
RBX [N] =	275 N	
RBY [N] =	275 N	
RCY [N] =	-75 N	
RCX [N] =	25 N	



2) Calcolare gli sforzi nelle aste e dire se sono tiranti o puntone

asta	Tipologia: TIRANTE/PUNTONE	Sforzo [N]
1	PUNTONE	1001,4 N
2	SCARICO	0
3	PUNTONE	1117,4 N
4	TIRANTE	500 N
5	SCARICO	0

