

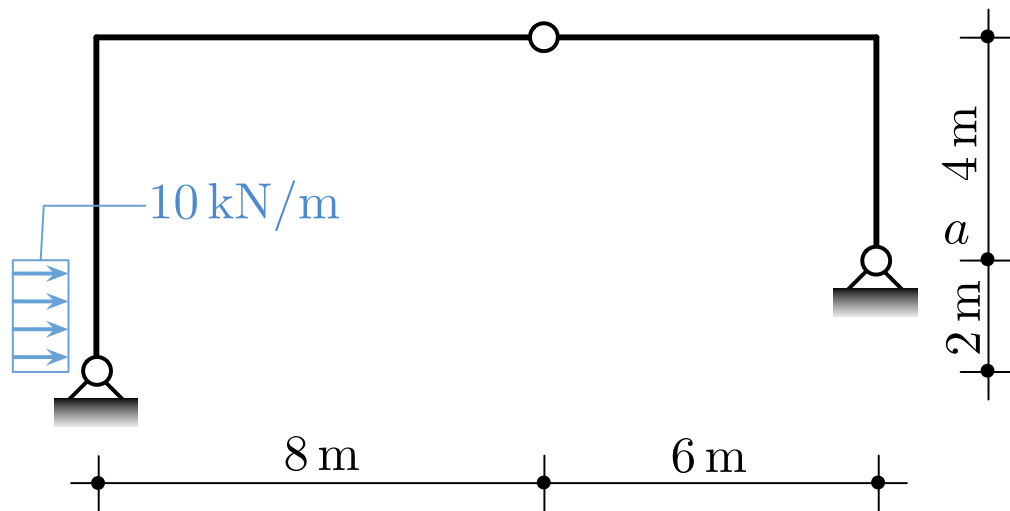
# FONDAMENTI DI MECCANICA DELLE STRUTTURE

(docente: G. FORMICA)

PROVA DI VERIFICA – 28 novembre 2012

STUDENTE:

prova **H**



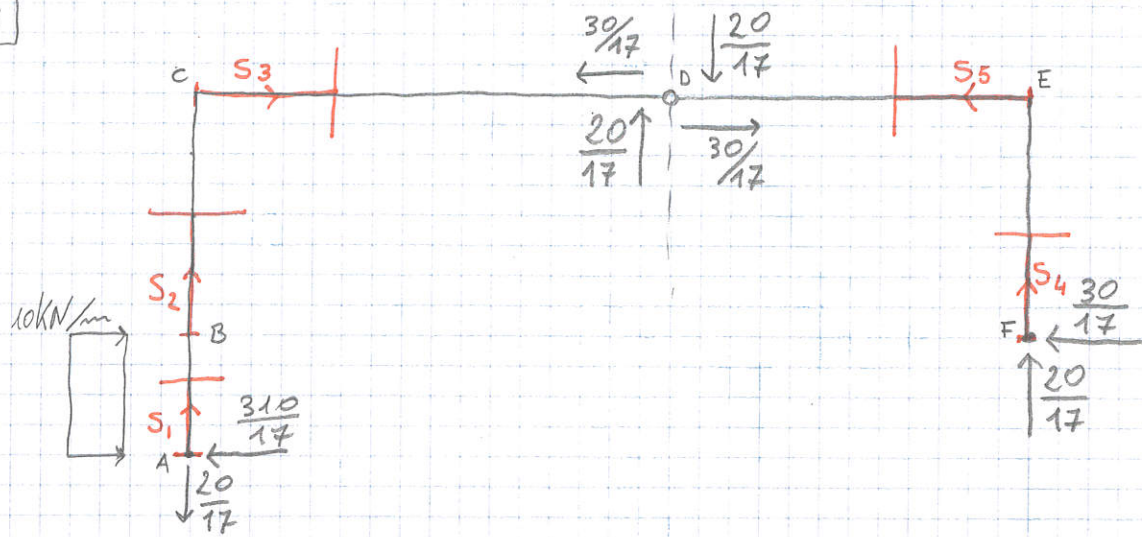
## Parte 1

Del sistema articolato di due corpi rigidi rappresentato in figura, si chiede di:

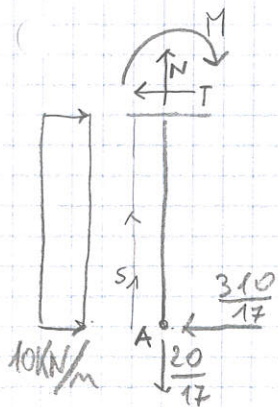
- 1.1. determinare il valore delle reazioni vincolari con il metodo dei corpi liberi.
- 1.2. verificare il valore della reazione vincolare **verticale**  $R_v(a)$  fornita dalla cerniera in  $a$ , utilizzando il metodo della potenza.
- 1.3. tracciare i grafici delle caratteristiche di sollecitazione ( $N$ ,  $T$ ,  $M$ ).

1.3

3



$$0 < S_1 < 2$$

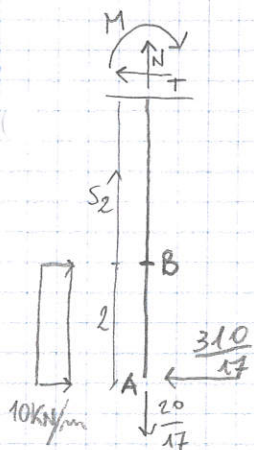


$$N_{S_1} = \frac{20}{17}$$

$$T_{S_1} = -\frac{310}{17} + 10 \cdot S_1 \quad \begin{cases} S_1 = 0 \rightarrow T = -\frac{310}{17} \\ S_1 = 2 \rightarrow T = -\frac{310}{17} + 20 = \frac{-310 + 340}{17} = \frac{30}{17} \end{cases}$$

$$M_{S_1} = \frac{310}{17} \cdot S_1 - 10 \cdot \frac{S_1^2}{2} \quad \begin{cases} S_1 = 0 \rightarrow M = 0 \\ S_1 = 2 \rightarrow M = \frac{620}{17} - 20 = \frac{620 - 340}{17} = \frac{280}{17} \end{cases}$$

$$0 < S_2 < 4$$



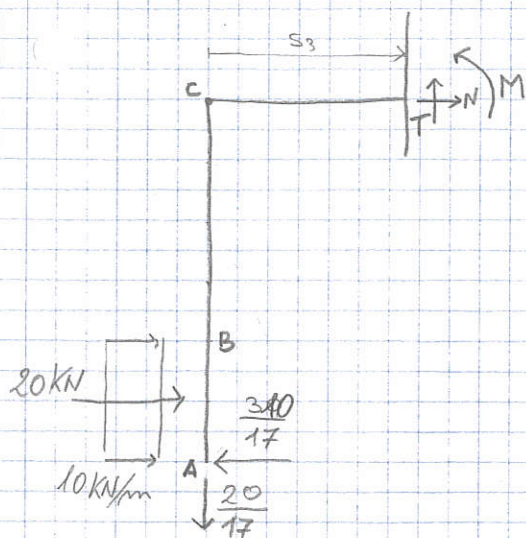
$$N_{S_2} = \frac{20}{17}$$

$$T_{S_2} = -\frac{310}{17} + 10 \cdot 2 = \frac{30}{17}$$

$$M_{S_2} = \frac{310}{17} \cdot (2 + S_2) - 10 \cdot 2 \cdot (1 + S_2) \quad \begin{cases} S_2 = 0 \rightarrow M = \frac{620 - 340}{17} = \frac{280}{17} \\ S_2 = 4 \rightarrow M = \frac{310 \cdot 6}{17} - 100 = \frac{160}{17} \end{cases}$$



$$0 < S_3 < 8$$



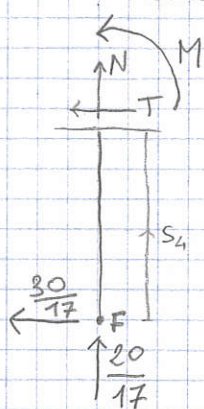
$$N_{S_3} = -20 + \frac{340}{17} = \frac{-340 + 340}{17} = -\frac{30}{17}$$

$$T_{S_3} = \frac{20}{17}$$

$$M_{S_3} = M_c - \frac{20}{17} \cdot S_3 \rightarrow S_3 = 0 \rightarrow M = \frac{160}{17} \curvearrowright$$

$$S_3 = 8 \rightarrow M = \frac{160}{17} - \frac{160}{17} = 0$$

$$0 < S_4 < 4$$



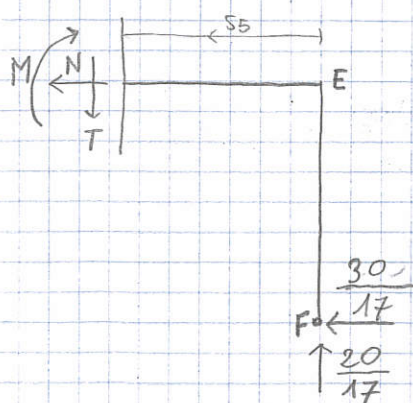
$$N_{S_4} = -\frac{20}{17}$$

$$T_{S_4} = -\frac{30}{17}$$

$$M_{S_4} = \frac{30}{17} \cdot S_4 \rightarrow S_4 = 0 \rightarrow M = 0$$

$$S_4 = 4 \rightarrow M = \frac{120}{17} \curvearrowright$$

$$0 < S_5 < 6$$



$$N_{S_5} = -\frac{30}{17}$$

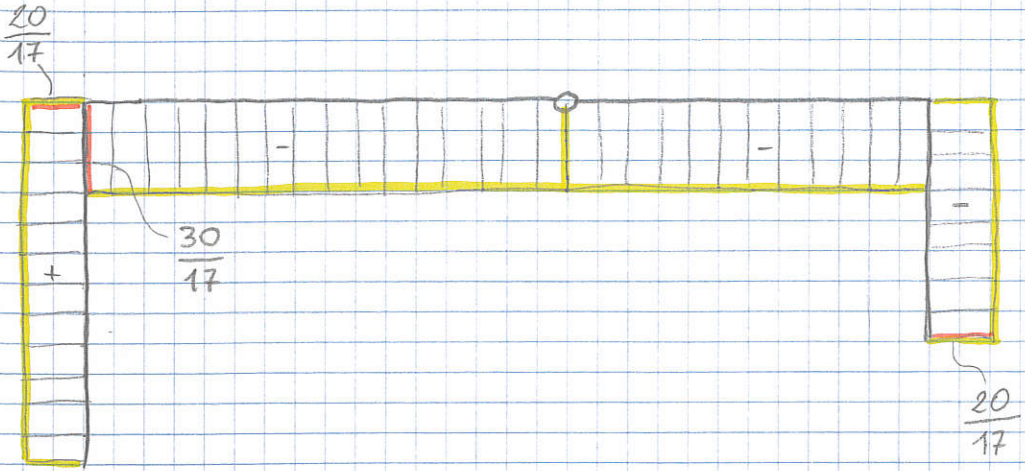
$$T_{S_5} = \frac{20}{17}$$

$$M_{S_5} = M_E - \frac{20}{17} \cdot S_5 \rightarrow S_5 = 0 \rightarrow M = \frac{120}{17} \curvearrowright$$

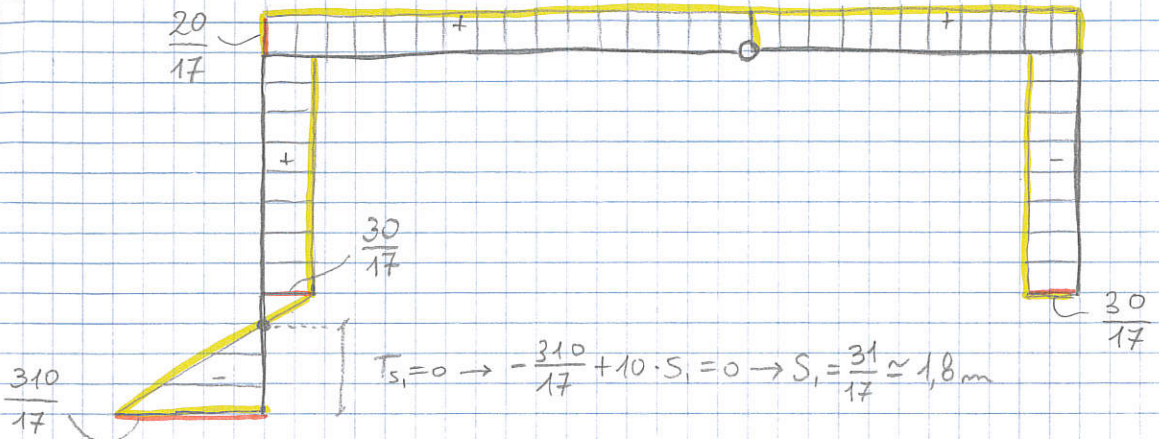
$$S_5 = 6 \rightarrow M = \frac{120}{17} - \frac{120}{17} = 0$$



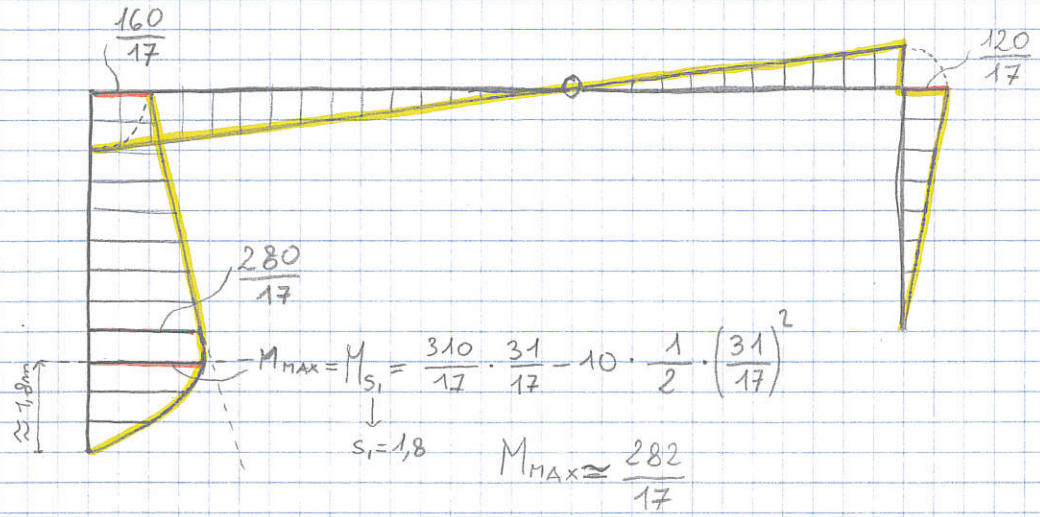
N



T



M



Nodi

