

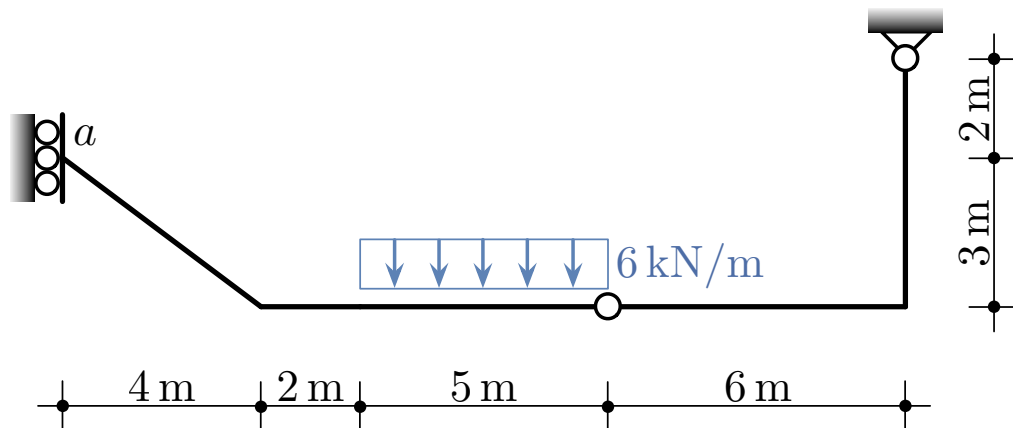
# FONDAMENTI DI MECCANICA DELLE STRUTTURE

(docente: G. FORMICA)

PROVA di VERIFICA – 27 novembre 2017

STUDENTE:

traccia **D**



## Parte 1

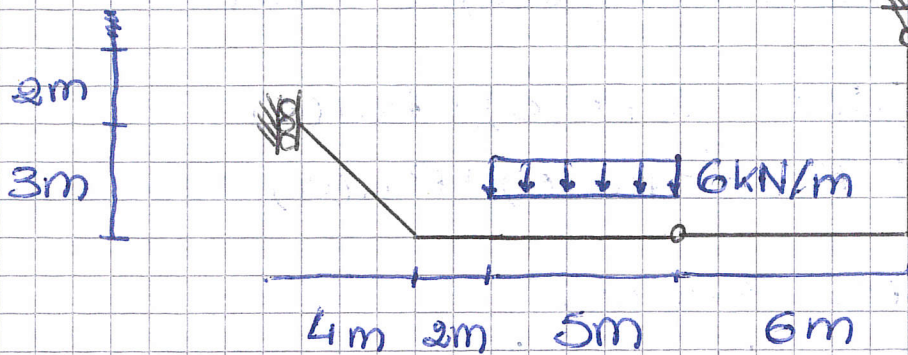
Del sistema isostatico rappresentato in figura, si chiede di:

- 1.1. determinare il valore delle reazioni vincolari con il metodo dei corpi liberi.
- 1.2. verificare il valore della reazione vincolare a rotazione  $R_m(a)$  fornita dal pattino in  $a$ , utilizzando il metodo della potenza.
- 1.3. tracciare i grafici delle caratteristiche della sollecitazione ( $N$ ,  $T$ ,  $M$ ).

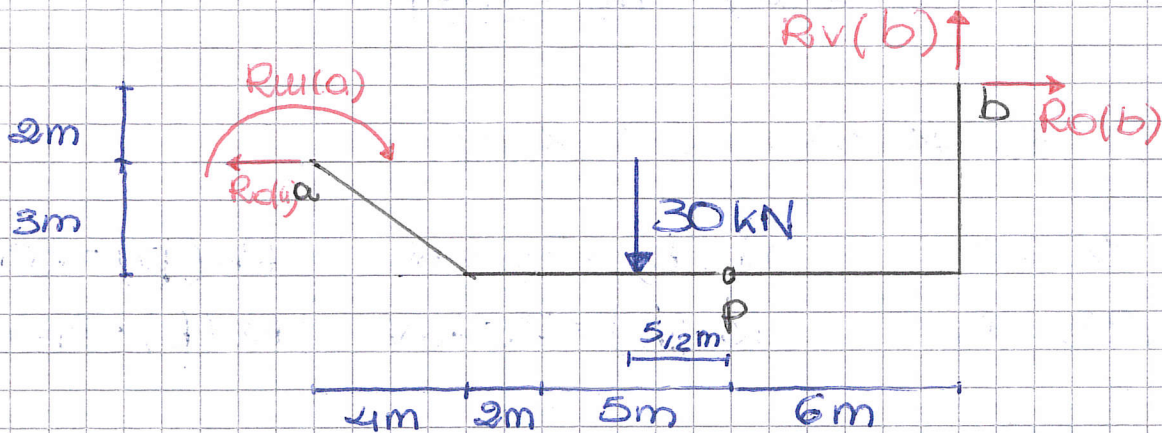
BERNARDO  
STELLA  
27/11/17

TRACCIA D

PI/30



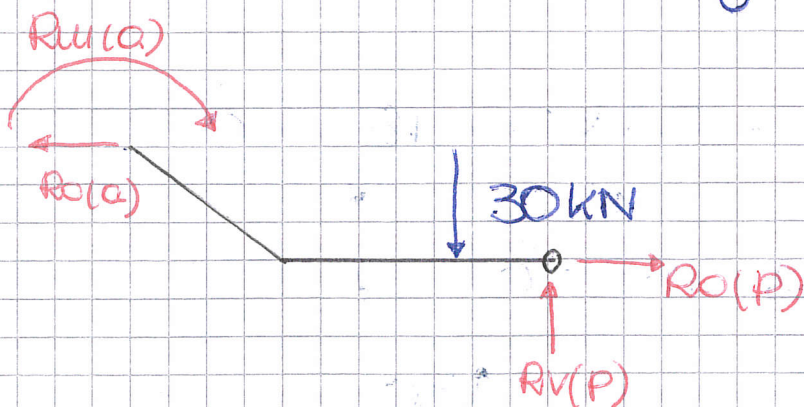
# 1. REAZIONI VINCOLARI (CORPI LIBERI)



EQU.  
GLOBALE

$$\begin{cases} \sum F_v = 0 \\ \sum F_o = 0 \\ \sum M_{c=b} = 0 \end{cases}$$

$$\begin{cases} 30 \text{ kN} - R_v(b) = 0 \\ R_o(a) - R_o(b) = 0 \\ 30 \text{ kN} \left( 6 \text{ m} + \frac{5}{2} \text{ m} \right) - R_o(a) \times 2 \text{ m} - R_{u(a)} = 0 \end{cases}$$



EQUILIBRIO  
LOCALE A SX

$$\begin{cases} \sum F_v = 0 \\ \sum F_o = 0 \\ \sum M_{c=p} = 0 \end{cases}$$

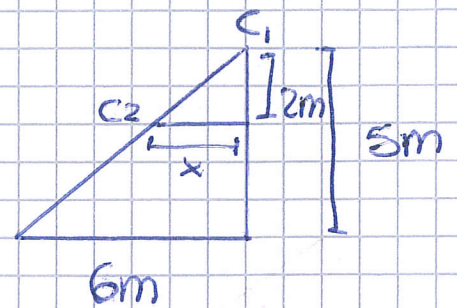
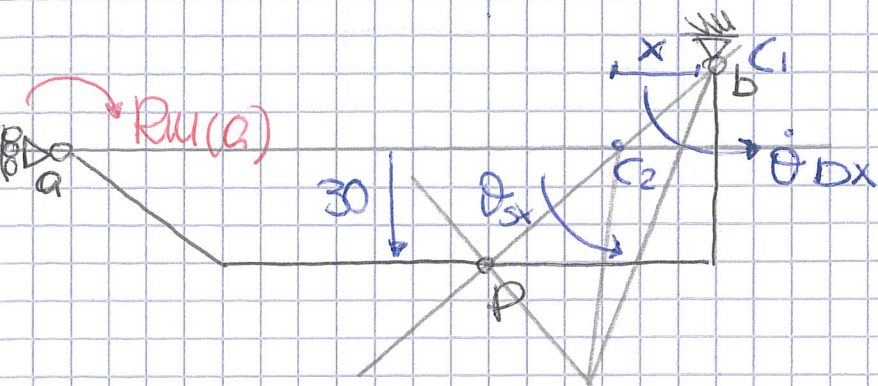
$$\begin{cases} 30 \text{ kN} - R_v(p) = 0 \\ R_o(a) - R_o(p) = 0 \\ 30 \times \frac{5}{2} \text{ m} + R_o(a) \times 3 \text{ m} - R_{u(a)} = 0 \end{cases}$$







# METODO POTENZA



$$6:5m = x:2m$$

$$x = \frac{6 \times 2}{5} = \frac{12}{5} = 2,4$$

$$6 - \frac{12}{5} = \frac{18}{5}$$

$$6m - 2,4m = 3,6m$$

$$\theta_{dx} 6m = \theta_{sx} (3,6m)$$

$$\theta_{dx} 6m = \theta_{sx} \left(\frac{18}{5}\right)$$

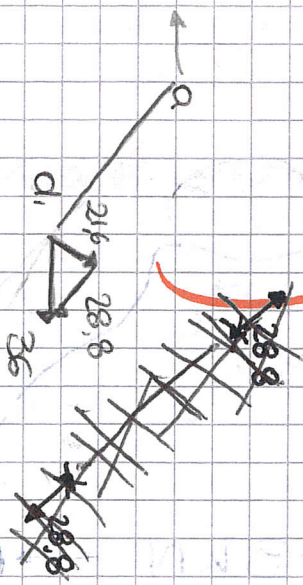
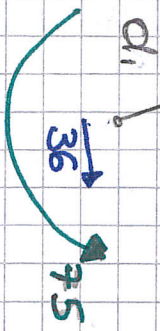
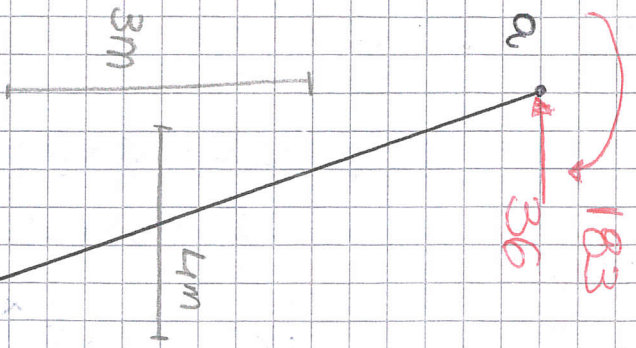
$$P = R_u(a) \theta_{sx} - 30kN \times (6,1 \times \theta_{sx}) = 0$$

$$R_u(a) = 183 kN$$

$$\frac{18}{5} + \frac{5}{2} = \frac{61}{10} = 6,1$$

↳ VERIFICATO





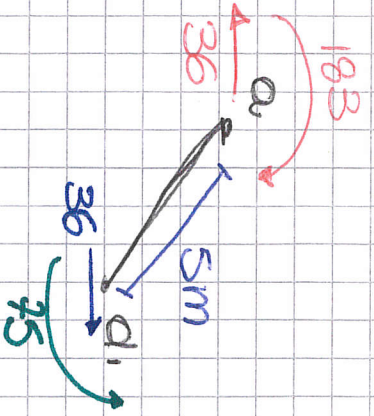
$$\frac{b-d_1}{36 \times 5} = 180$$

$$\frac{p-d_1}{180 - 180 = 0}$$

$$\frac{p-d_1}{30 \times 2.5} = 7.5$$

$$\frac{a-d_1}{7.5 + 36 \times 3} = 183$$

$$7.5 + 36 \times 3 = 183$$



$$\text{TAGLIO} = \frac{183 - 7.5}{5}$$

$$= \frac{108}{5} = 21.6$$

$$\text{NORMALE} =$$

$$= \sqrt{36^2 - 21.6^2} =$$

$$= \sqrt{1296 - 466.56} =$$

$$= 28.8$$

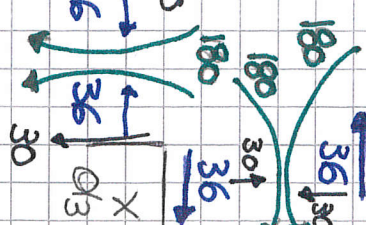
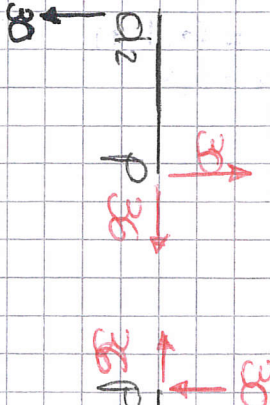
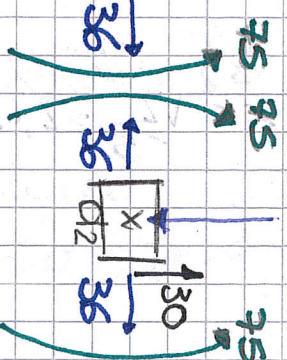
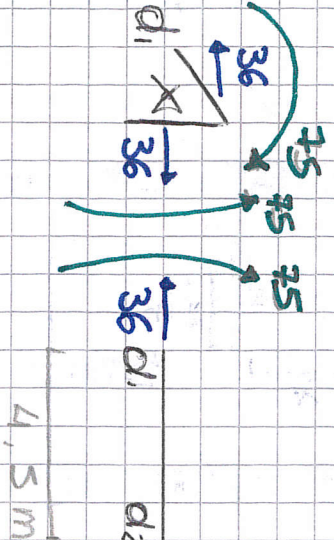




GRAFICO SFORZI ASSIALI

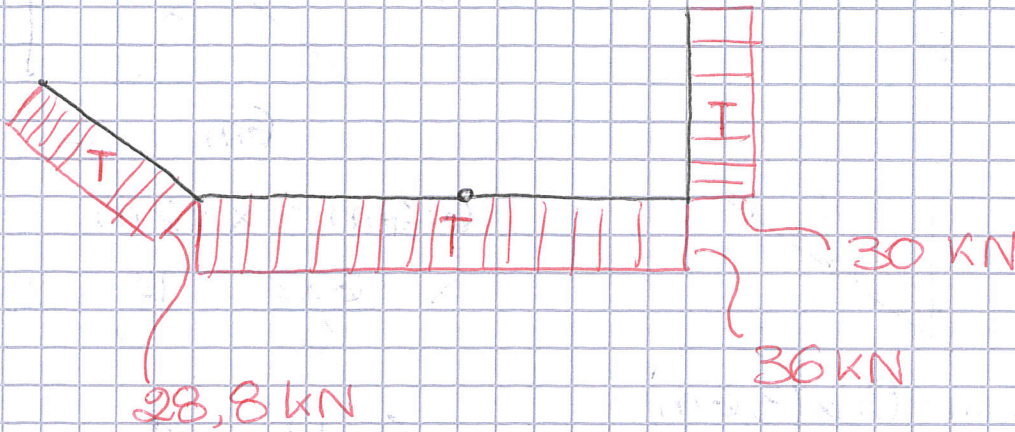


GRAFICO TAGLIO

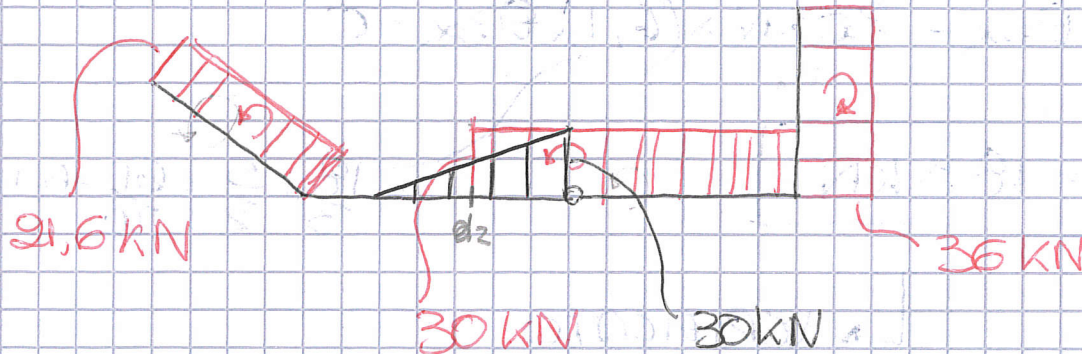


GRAFICO MOMENTO

