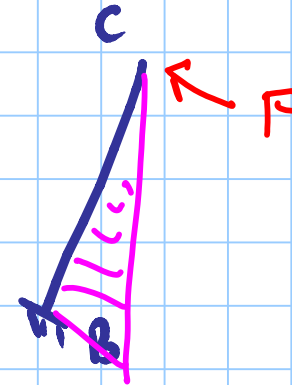
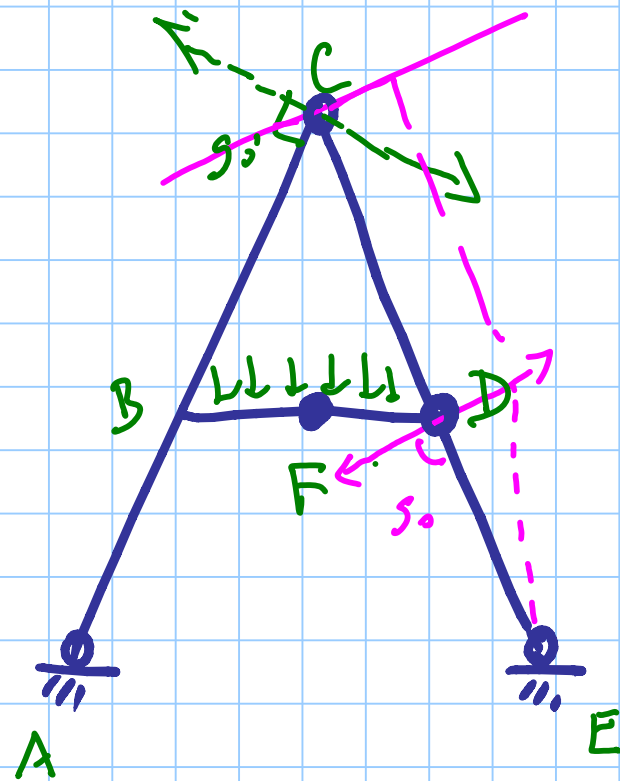
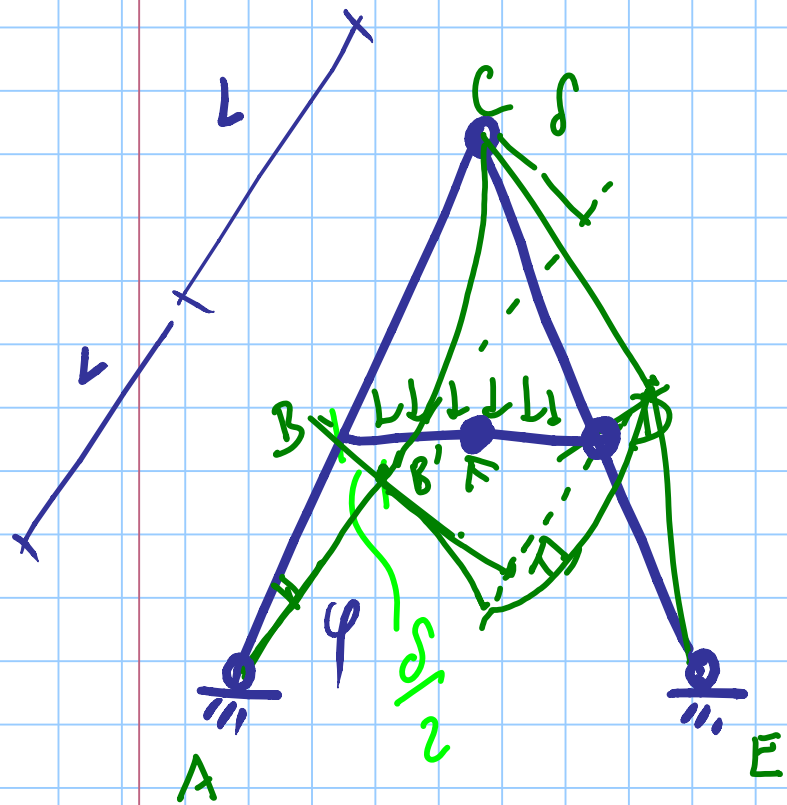
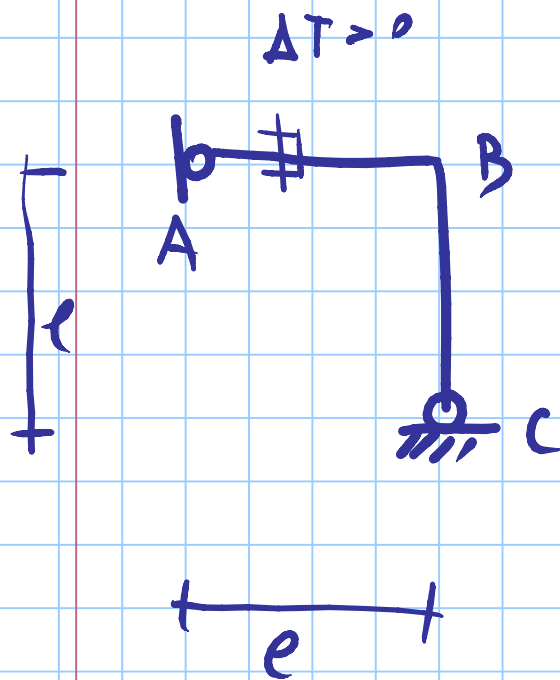


$$\delta = \frac{Fl^3}{3EI}$$

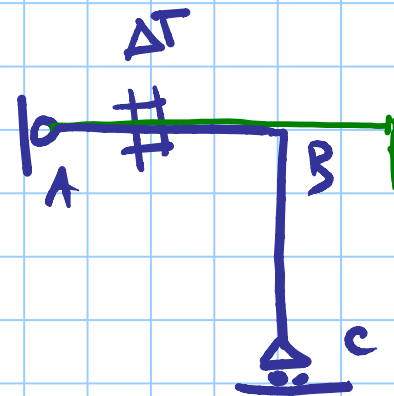
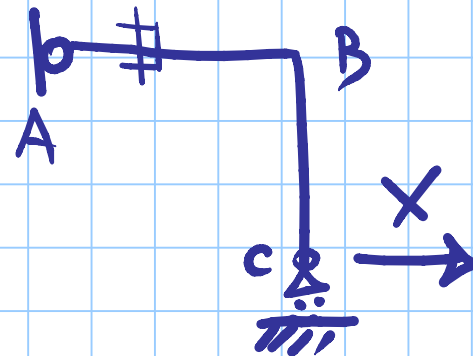






METODO
DELLE FORZE

LAVORO VIRTUALE

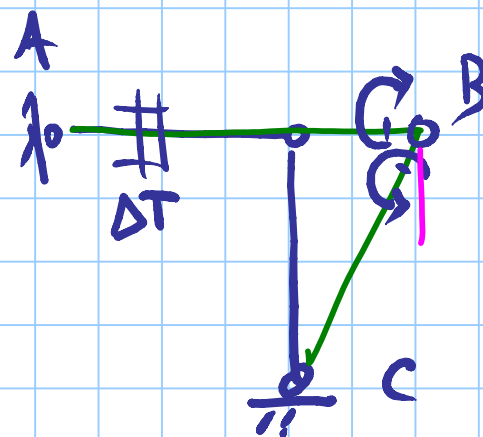
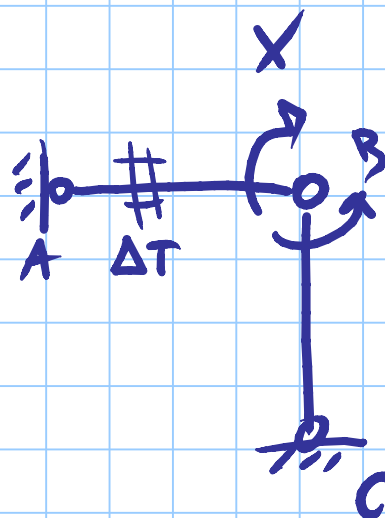
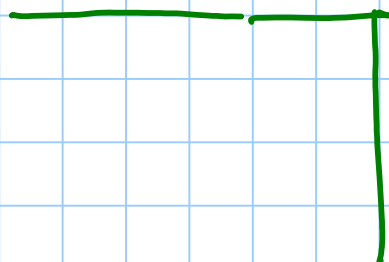
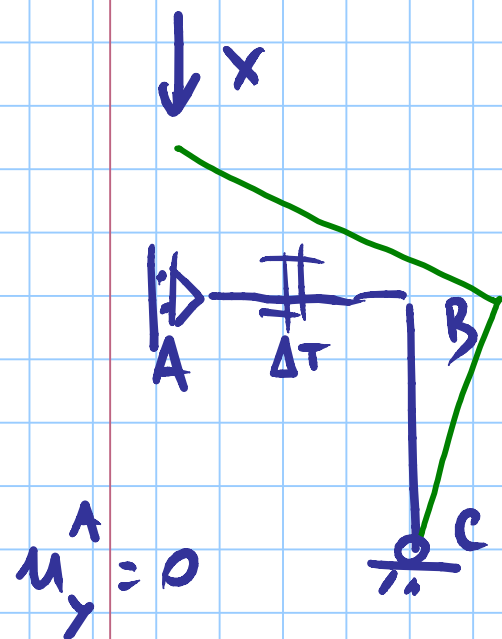


schema
isostatico

azione del
vincolo eliminata

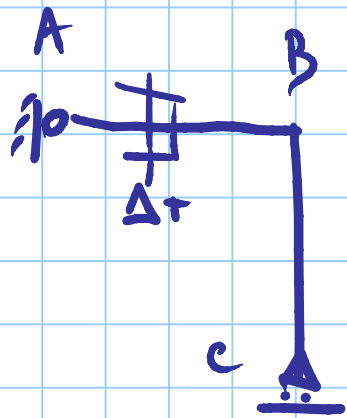
Condizione di
CONFRUENZA

$$M_x^C = 0$$



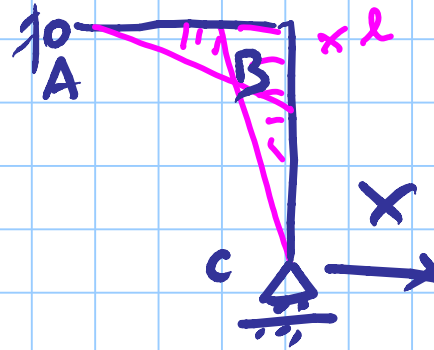
VALERIA
OLIVELLI

$$\varphi_{BA} = \varphi_{BC}$$



$$M_x^c(1)$$

1° scheme
di carico



$$M_x^c(2)$$

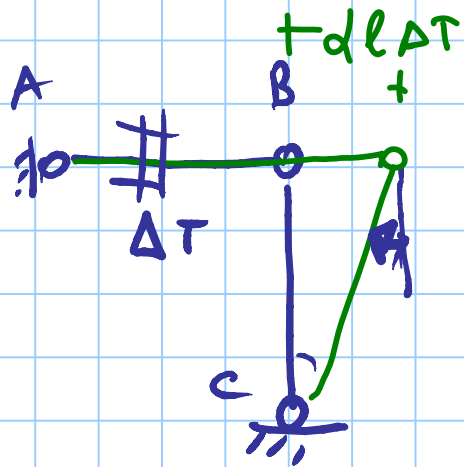
2° scheme
di carico

STEFANO
CASCONI



$$M_x^c(1) + M_x^c(2) = 0$$

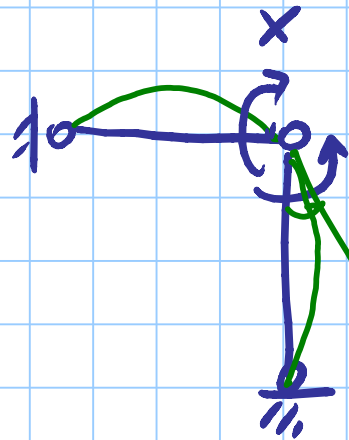
\Downarrow
a l ΔT



1° schema
di carica

$$\varphi_{BA}^{(1)} = 0$$

$$\varphi_{BC}^{(1)} = -\frac{\alpha \Delta T}{2}$$



2° schema di
carica

$$\varphi_{BA}^{(2)} = -\frac{x l}{3 E I}$$

$$\varphi_{BC}^{(2)} = \frac{x l}{3 E I}$$

$$-\frac{x l}{3 E I} = -\alpha \Delta T + \frac{x l}{3 E I}$$

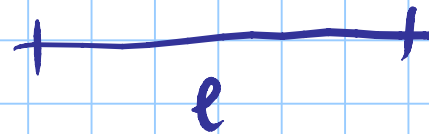
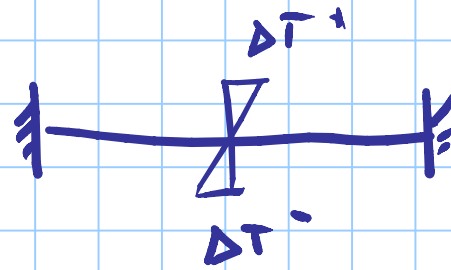
$$\frac{2 x l}{3 E I} = \alpha \Delta T$$

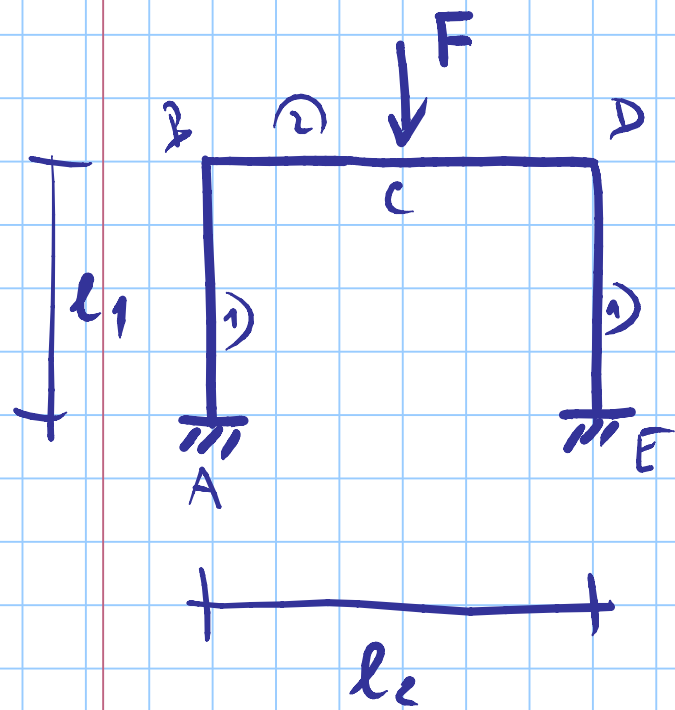
$$x = \frac{3 E I \alpha \Delta T}{2 l}$$

compiti per casa

- diagrammi di M

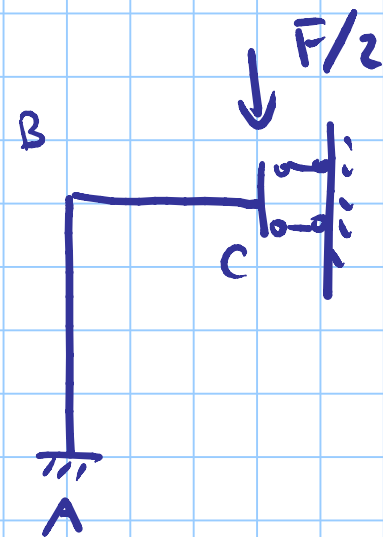
- deformata



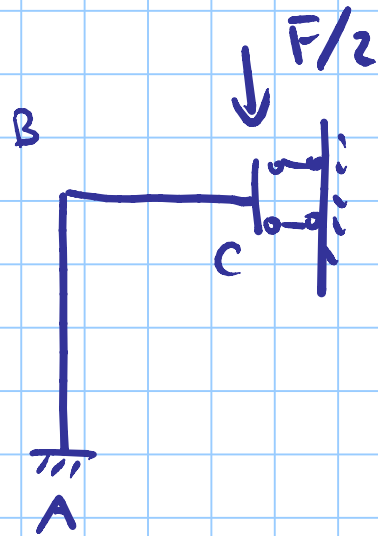


1) A_1 I_1

2) A_2 I_2

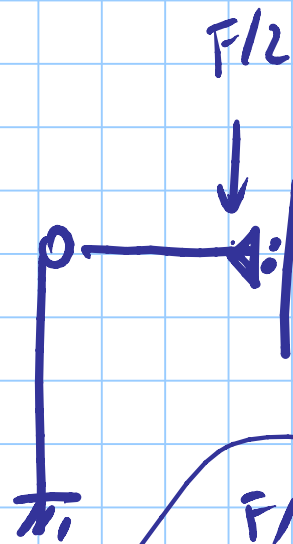


SIMMETRIA

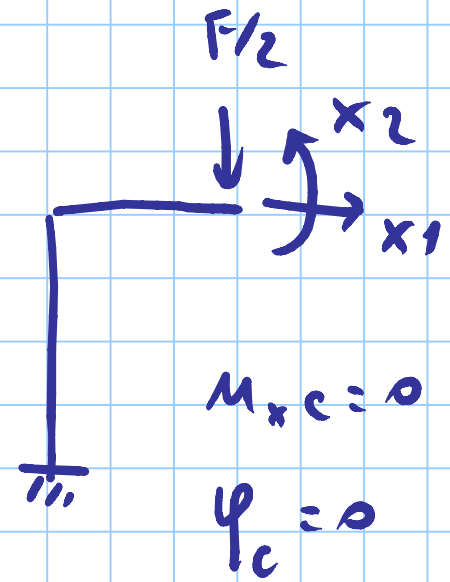
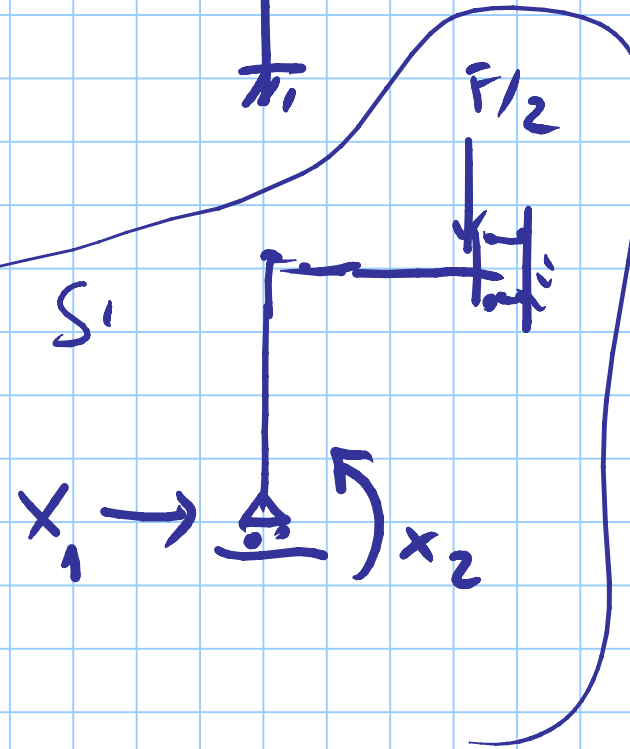


$$M_{x_A} = 0$$

$$\varphi_A = 0$$

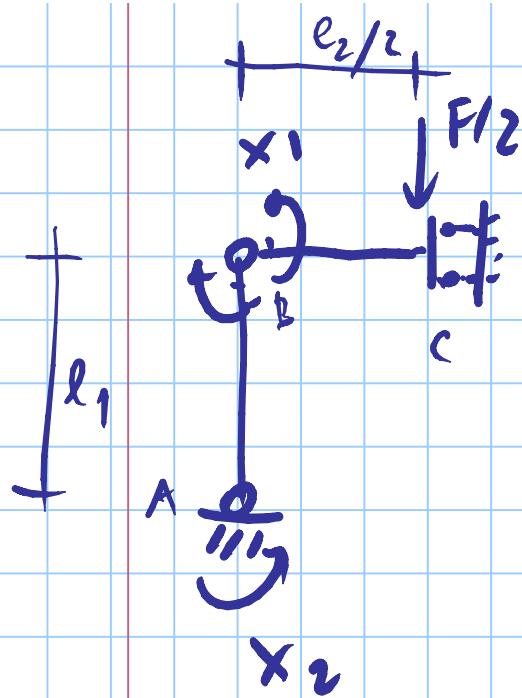


N°
LABILE



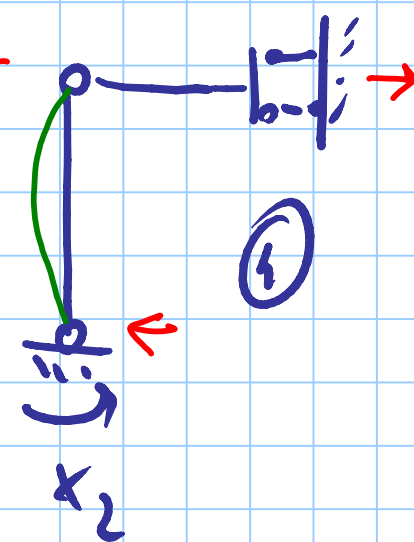
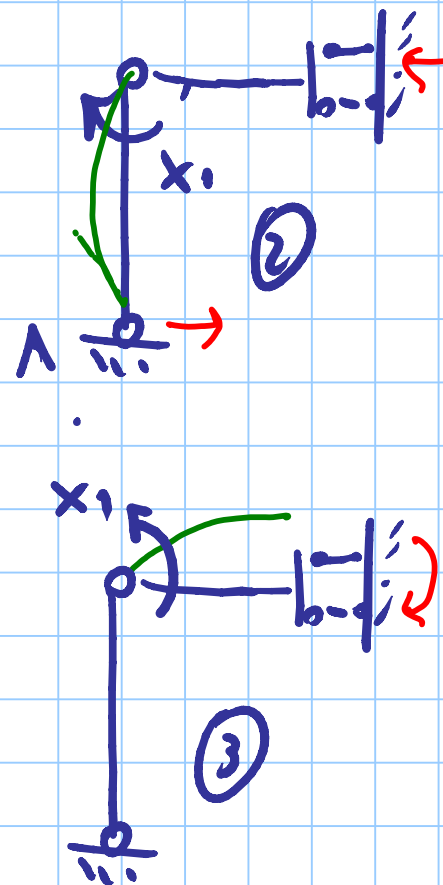
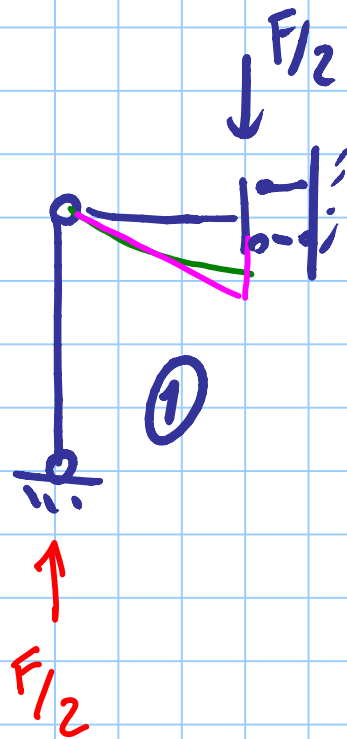
$$M_{x_C} = 0$$

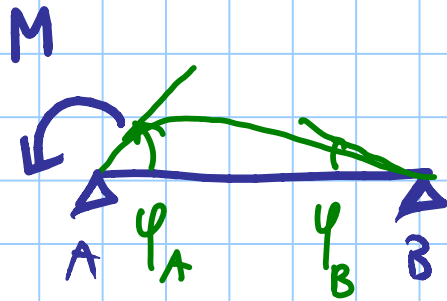
$$\varphi_C = 0$$



$$\varphi_A = \rho$$

$$\varphi_{BA} = \varphi_{BC}$$



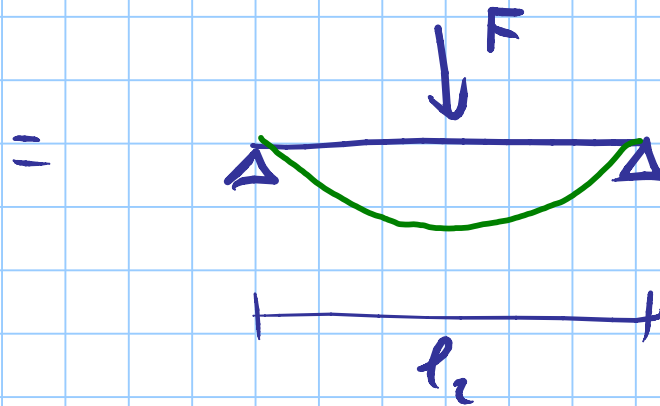
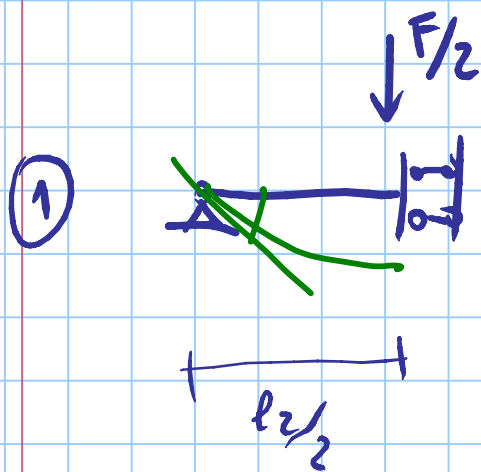


$$\varphi_A = \frac{Ml}{3EI}$$

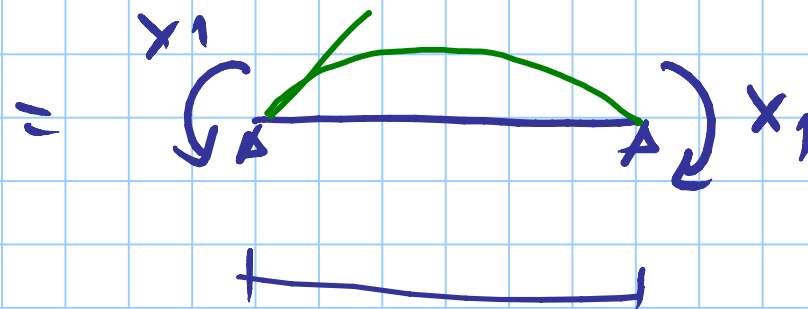
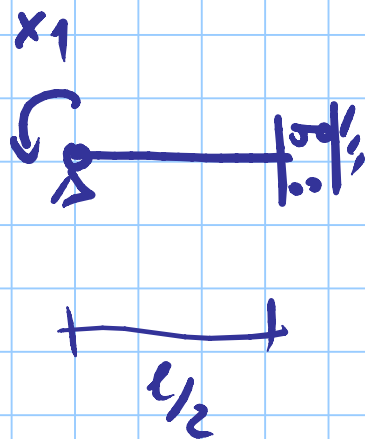
$$\varphi_B = -\frac{Ml}{6EI}$$

$$\varphi_A = \frac{x_1 l_1}{6EI_1} + \frac{x_2 l_1}{3EI_1} = 0$$

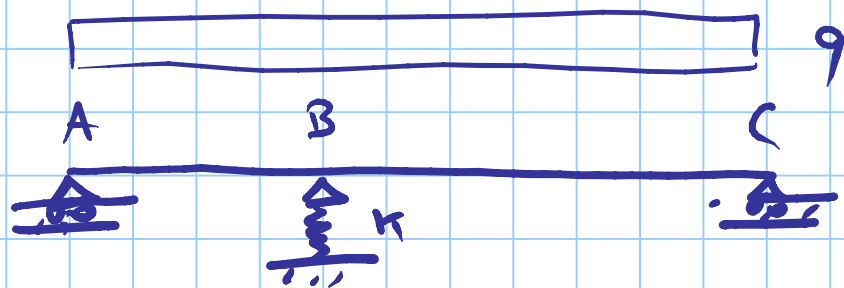
$$-\frac{x_1 l_1}{3EI_1} - \frac{x_2 l_1}{6EI_1} = -\frac{Fl_2^2}{16EI_2} + \frac{x_1 l_2}{2EI_2}$$



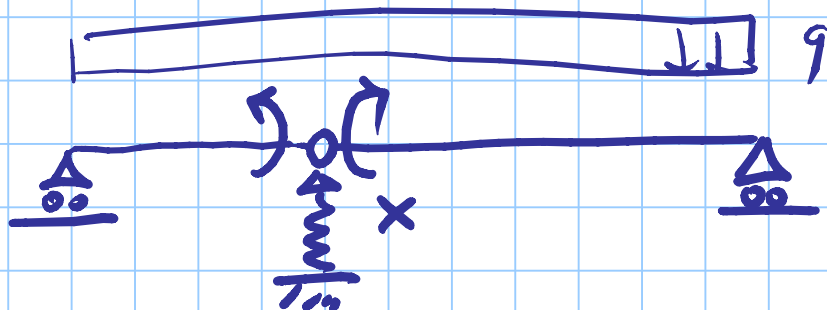
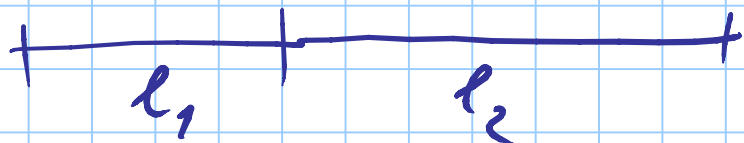
$$\varphi_A = \frac{Fl^2}{16EI}$$



$$\varphi_A = \frac{x_1 l}{3EI} + \frac{x_1 l}{6EI} = \frac{x_1 l}{2EI}$$



1 volta iperstatica



$$\varphi_{Ba} = \varphi_{Bc}$$

prova con
 $l_1 = l_2$, poi diversi

