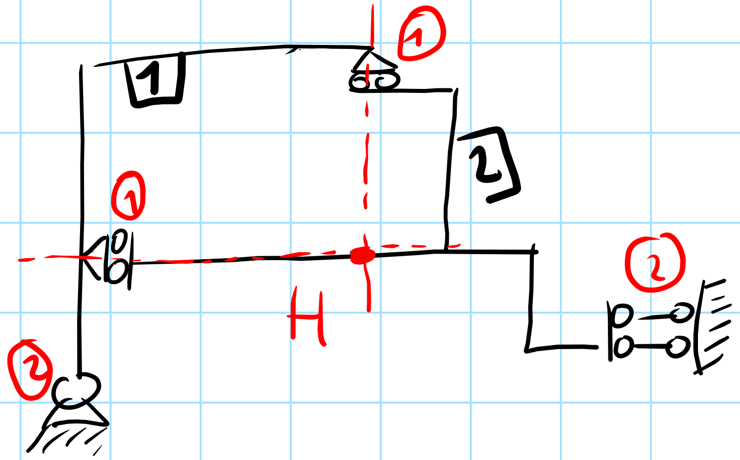
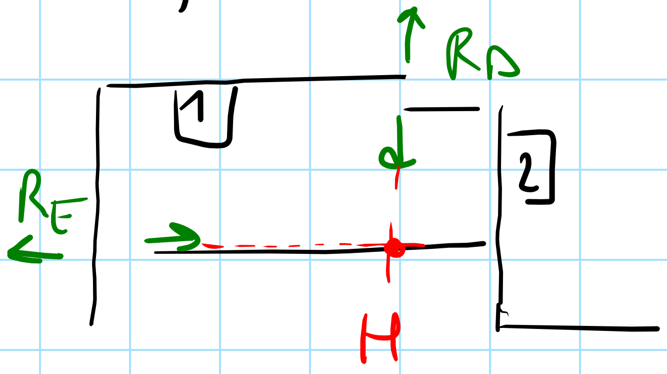
12/11/25

PROSEGUIAMO CON L'ARCO GEN. A 3 CERNIERE.

NEL CASO IN CUI I VINCOLI INTERNI ($v_{INT} = 2$) SIANO COSTITUITI DA 2 VINCOLI SEMPLICI (2 CARRELLI/PENDOLI) POSSIAMO AVERE QUESTI CASI:

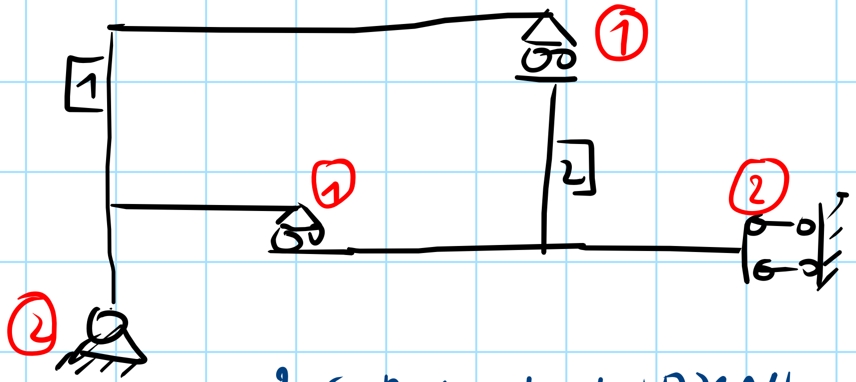




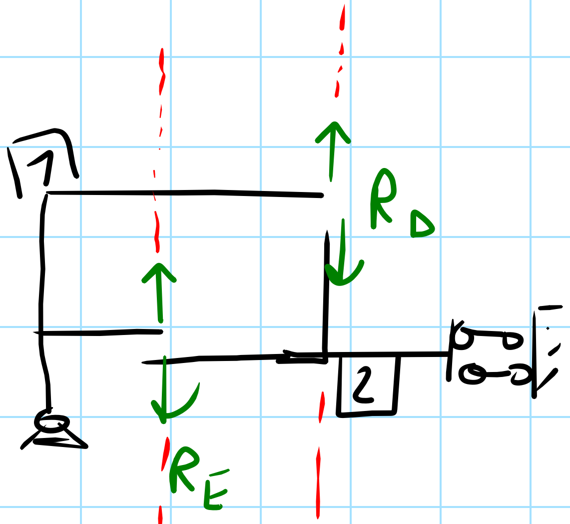
IL PUNTO H (INTERS. DEGLI ASSI DEI CARRELLI PUÒ ESSERE VISTO COME UNA <u>CERNIERA 'IDEALE'</u>)

$$\boxed{\text{L'EQ. AUSILIARIA è: } \overset{+}{\circlearrowleft}_H \text{ DI } \boxed{1} \ (\text{o } \boxed{2})}$$

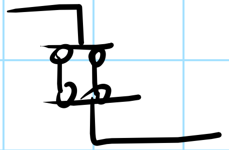
come se ci fosse cerniera in H



2 CARRELLI INTERNI PARALLELI

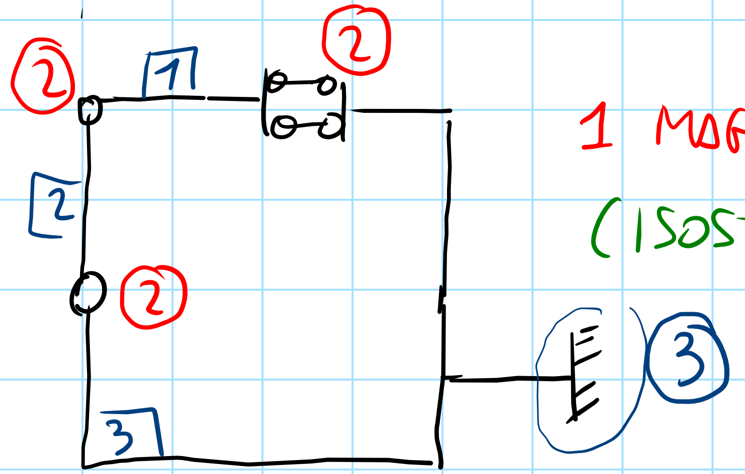


ASSI DEI CARRELLI

I DUE CARRELLI SONO EQUIVALENTI AD UN DOPPIO PENDOLO INTERNO 

L'EQ. AUSILIARIA sarà $\xrightarrow{+}$ di $\boxed{1}$ (o $\boxed{2}$). LA DIREZ. ORIZZ. È QUELLA $\perp$ ALLA DIREZ. DEGLI ASSI DEI CARRELLI

— STRUTTURE "CHIUSE" (LA LINEA D'ASSE DELLA TRAVATURA SI CHIUDE SU SE STESSA FORMANDO UNA O PIÙ "MAGLIE")



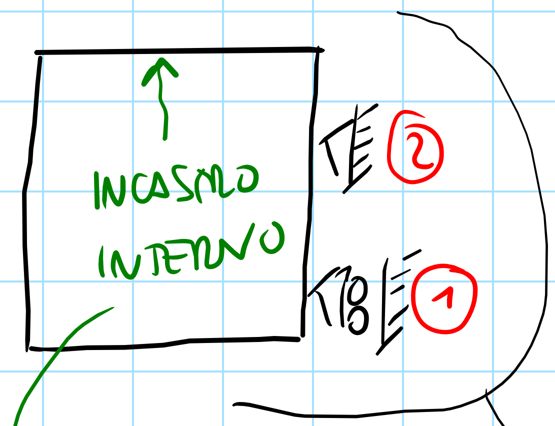
1 MAGLIA (ISOSTATICA)

$g = 9$

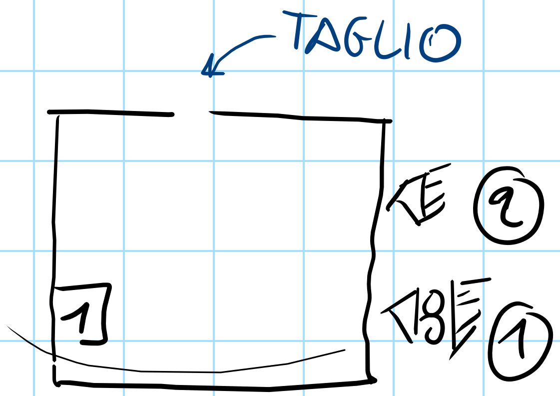
$v = v_e + v_i = 3 + 6 = 9$

$s = 9$ (NE PARLIAMO DOPO)

VEDIAMO COME OTTENERE UNA STR CHIUSA ISOST. CON UN RAGION. ALTERNATIVO.



INTRODUCE UN $v_{INT} = 3$ SOVRABBONDANTE



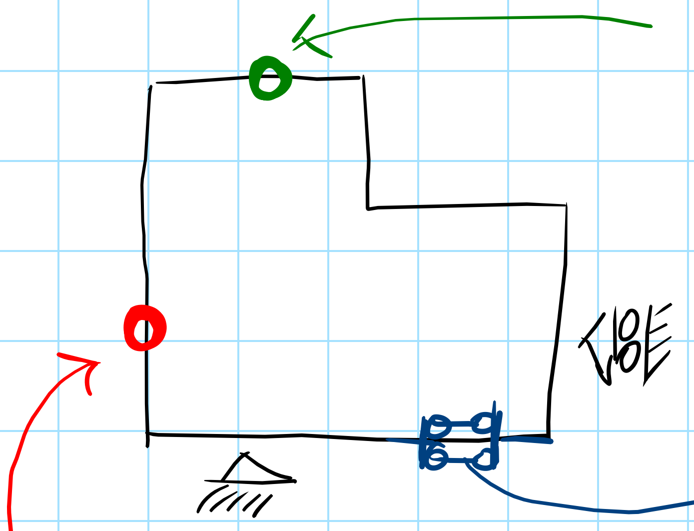
$g = 3$, $s = 3$, $v = 3$ } ISOST.

CLASSIFICAZIONE:

STR. ESTERN. ISOSTATICA

MA INTERN. 3 VOLTE IPERST.

UNA MAGLIA CONTINUA HA AL SUO INTERNO UN $v_{INT} = 3$ (3 VOLTE INTERN. IPERSTATICA)

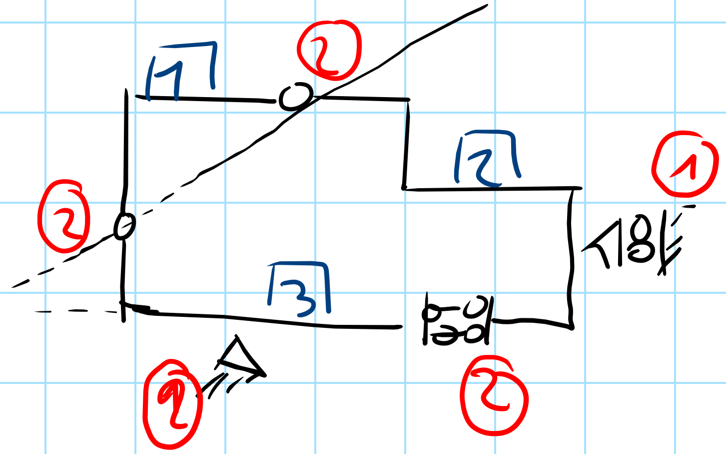


2ª SCONNESSIONE
(ORA LA STR. E' 1 VOLTA INTERN. IPERST)

3ª SCONNESSIONE
(ORA LA STR E' INTERN. ISOSTATICA)

1ª SCONNESSIONE (ORA LA STR. E 2 VOLTE INT. IPER)

CON IL SOLITO METODO:



$g = 9$

$$\left.\begin{array}{l} v_{est} = 3 \\ v_{int} = 6 \end{array}\right\} v = 9$$

$l = 9$ (VEDIAMO PERCHE' (*))

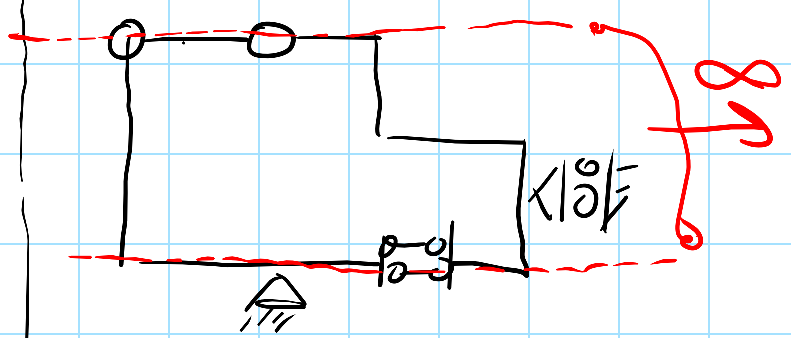
(*): VINCOLI EST. BEN DISPOSTI

3 VINCOLI DOPPI INTERNI CON ALLINEAM. DEI CENTRI (C.I.R.) NON AMMISSIBILE

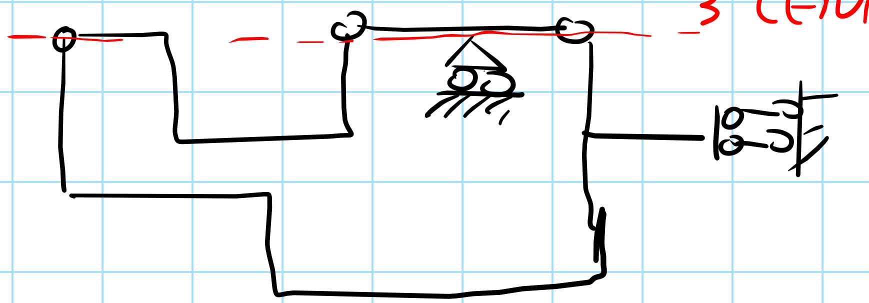
SCONNESSIONE: VINCOLO DOPPIO CHE SOSTITUISCE L'INCASTRO "INTERNO"

UNA STR. CHIUSA ISOSTATICA DEVE ESSERE CONTEMPORANEAM. ISO ESTERN. e ISO INTERN.

CASO CRITICO:

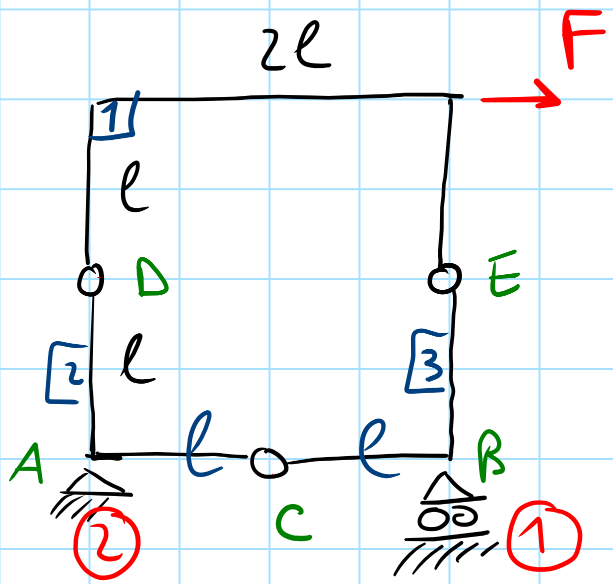


ALLIN. CERNIERE ⟺ ASSE DOPPIO PENDOLO



3 CERNIERE INTERNE ALLINEATE

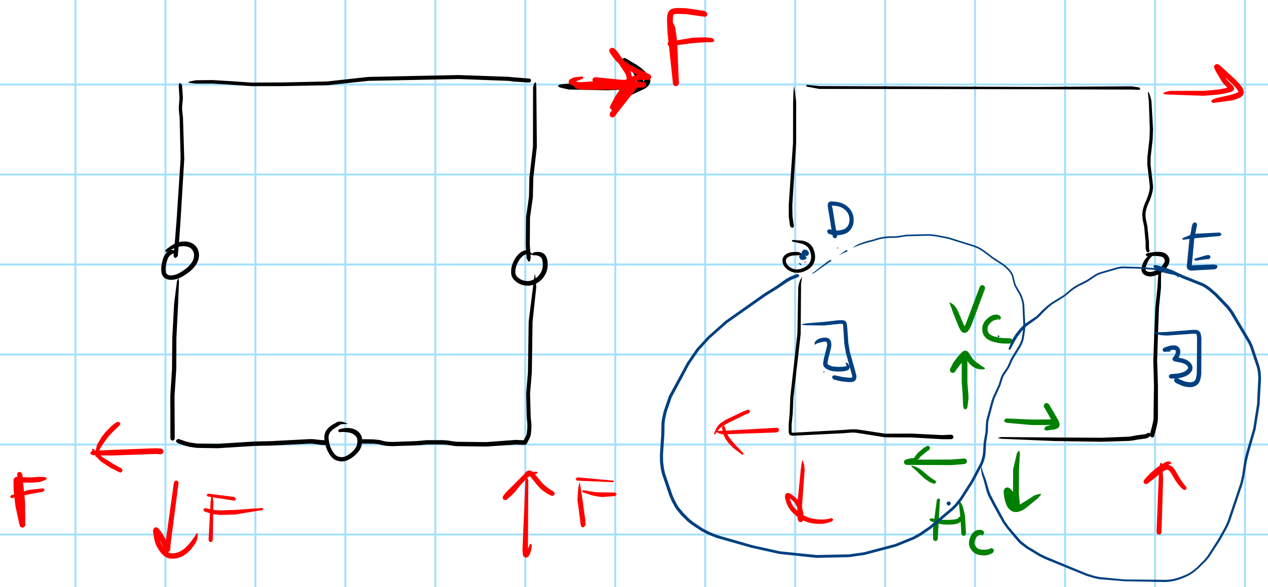
ESERCIZIO



$g = 9$ N_{EST}

$v = 6 + 3 = 9$

$s = 9$



TATTICA: QUALE N° MINIMO DI EQUAZ. POSSO SCRIVERE PER CALCOLARE LE REAZ. ESTERNE?

RISP. 3! ECS. "ESTERNE"

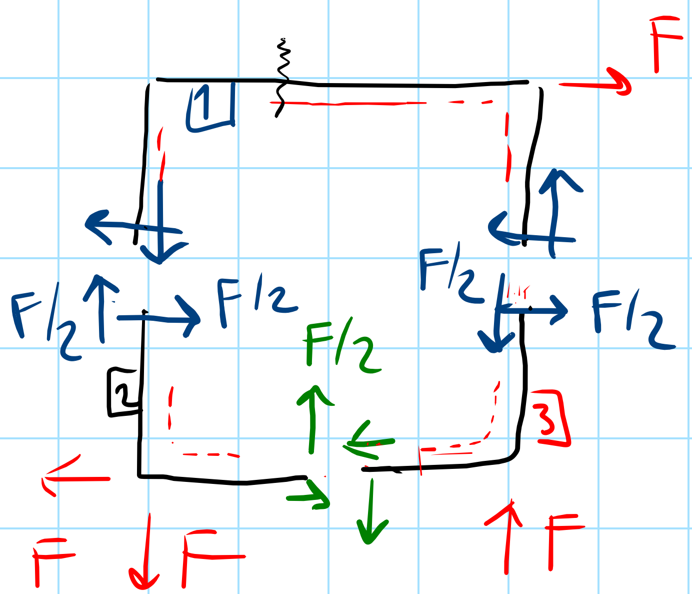
POI "APRO" LA STRUTT. IN CORRISP. DI UNO DEI VINCOLI INTERNI. (SCELGO C)

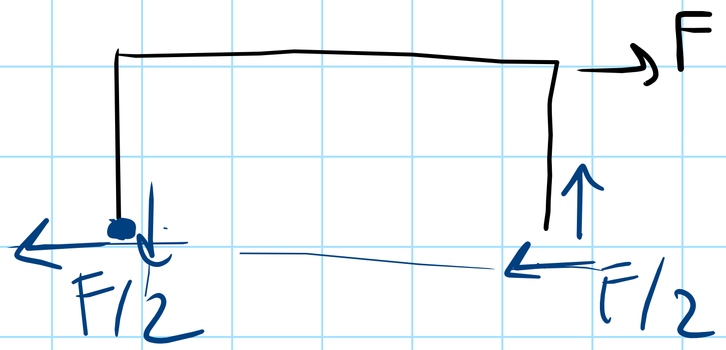
→ SFRUTTO EQ. AUSILIARIE RISP. AI DUE VINCOLI INTERNI RIMASTI:

$$\begin{cases} \circlearrowleft^{+} D\ \boxed{2}: +V_c l - H_c l - Fl = 0 \\ \circlearrowleft^{+} E\ \boxed{3}: +V_c l + H_c l = 0 \end{cases} \Rightarrow \begin{array}{l} V_c = +F/2 \\ H_c = -F/2 \end{array}$$

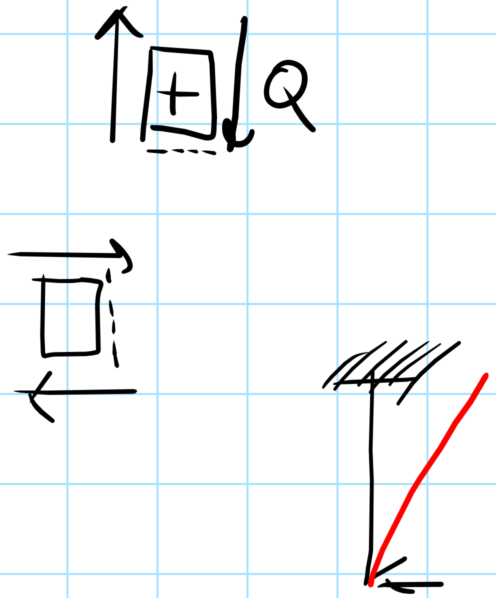
ORA CONSIDERO L'EQUIL DEL CORPO $\boxed{2}$ e DEL CORPO $\boxed{3}$ e CALCOLO LE REAZ. IN D e E

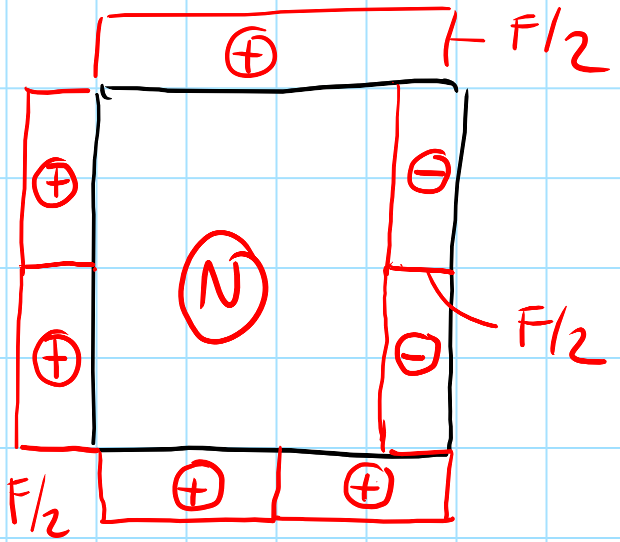
ORA IL CORPO $\boxed{1}$ DEVE ESSERE IN EQUILIBRIO

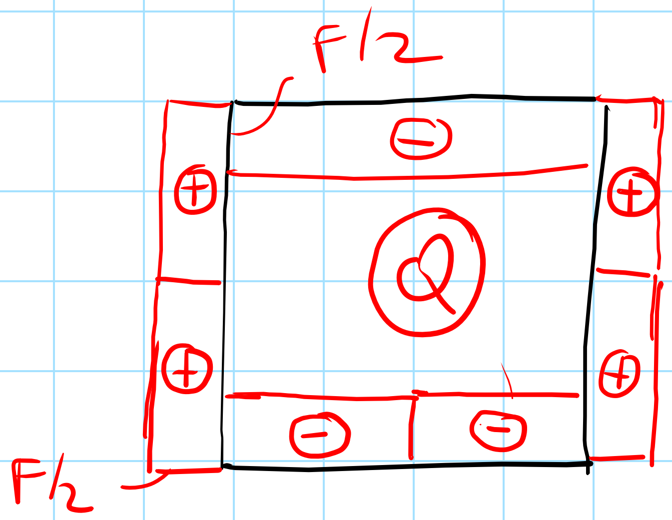


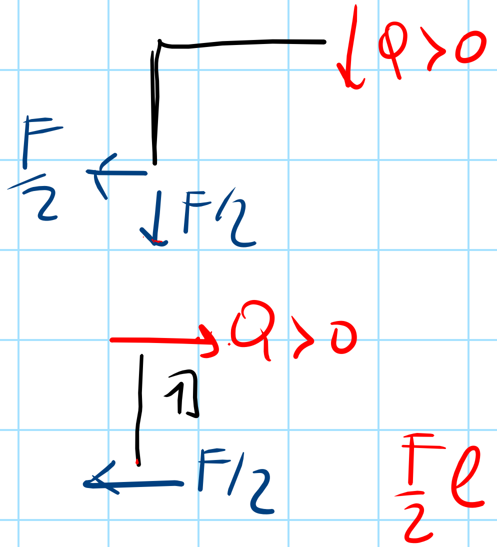


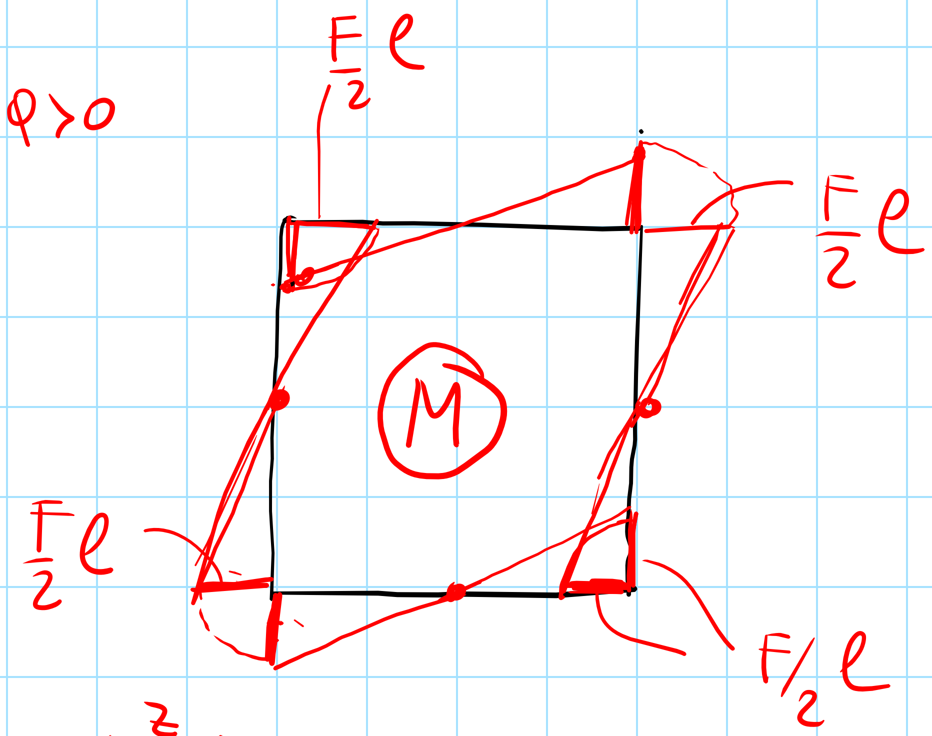
OK! IN EQUIL.

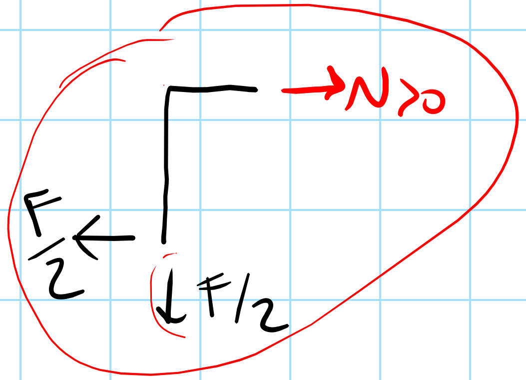


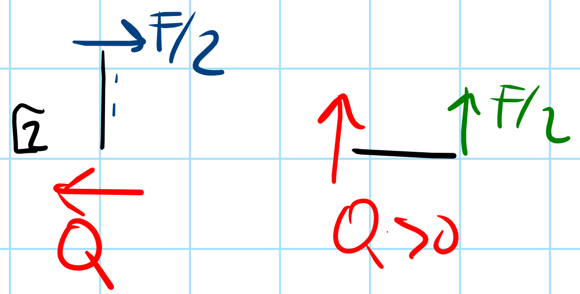


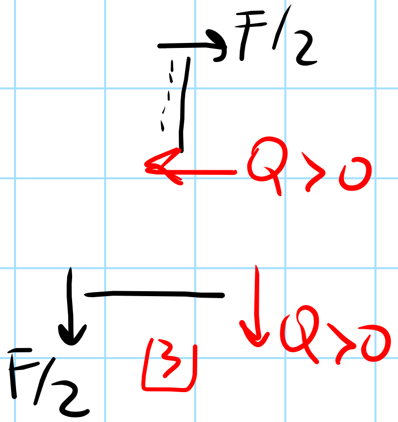


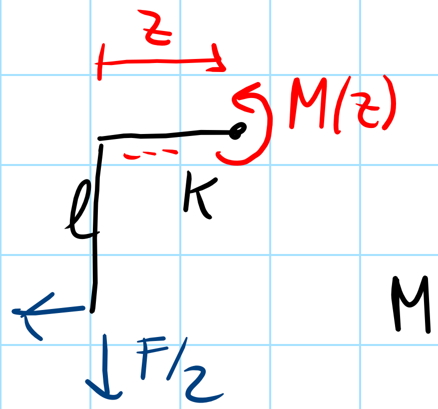












$$\circlearrowleft K: -\frac{F}{2}\ell + \frac{F}{2}z + M(z) = 0$$

$$M(z) = \frac{F}{2}(\ell - z)$$

$M(0) = +\frac{F}{2}\ell$

$M(2\ell) = -\frac{F}{2}\ell$