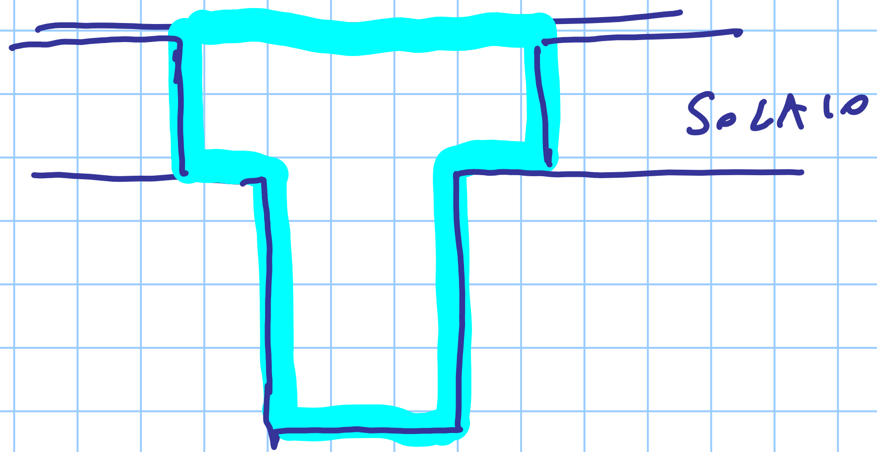
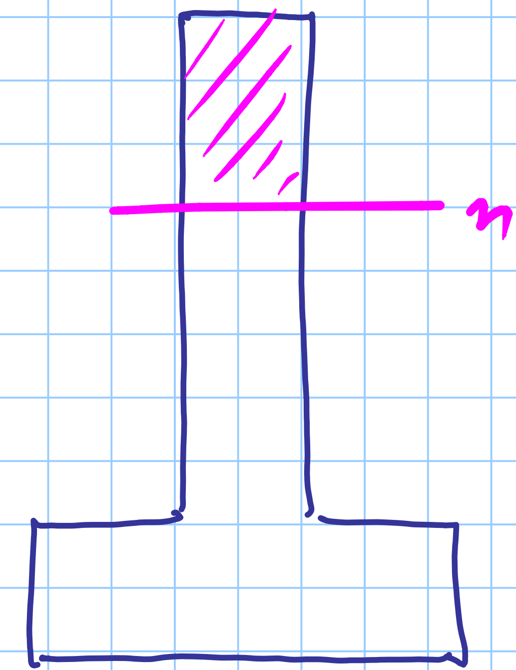
Titolo nota 02/04/2014

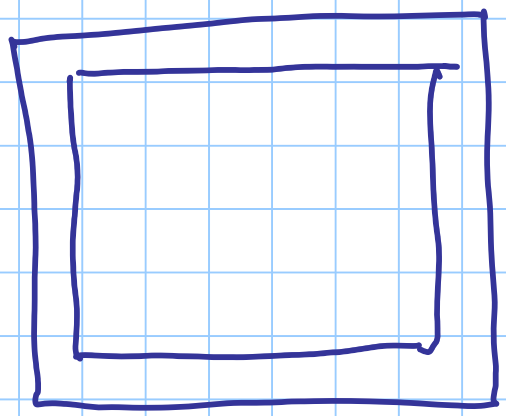
TRAVE DI FONDAZIONE



sezione a T

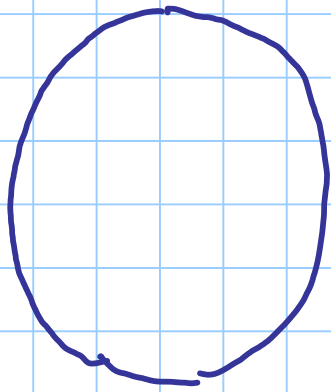


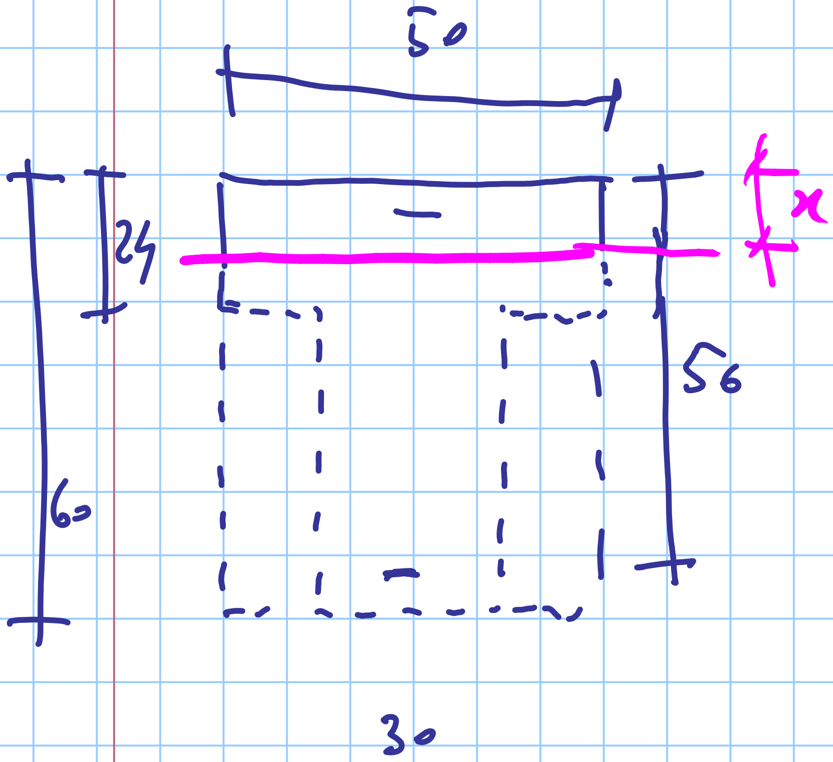
sezione a T rovescia

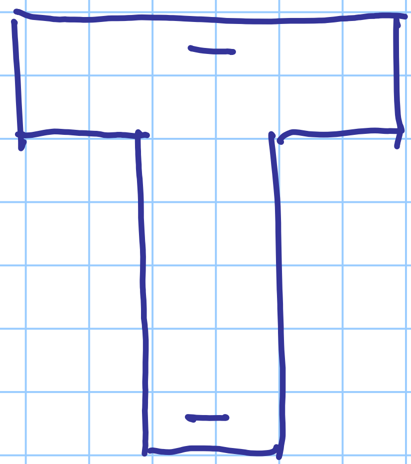


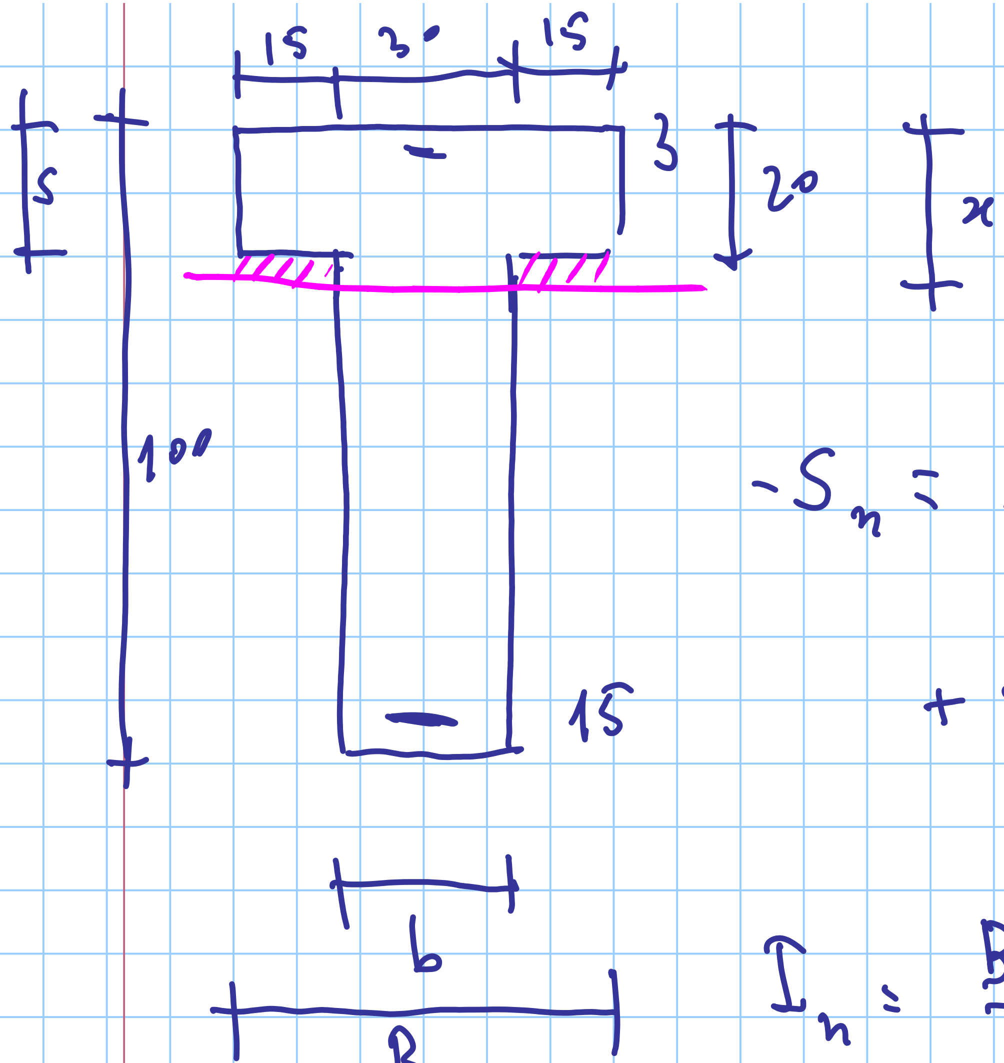
[illegible]

PALJ




50
24
60
56
x
30





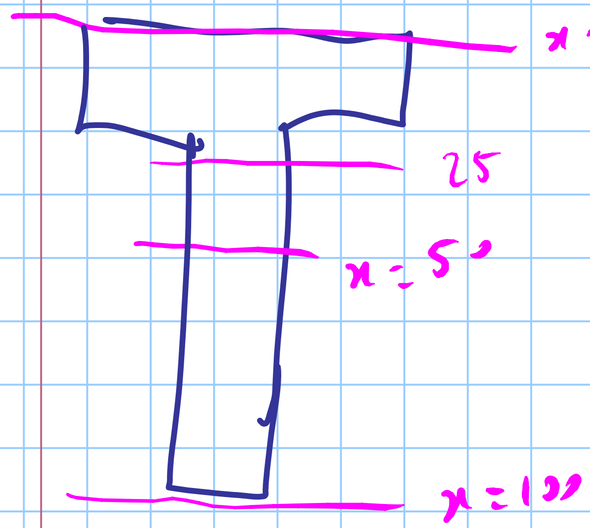
$$-S_n = \frac{B x^2}{2} - \frac{(B-b)(x-s)^2}{2} +$$

$$+ n A_s' (x-c) - n A_s (d-x) = 0$$

$$I_n = \frac{B x^3}{3} - \frac{(B-b)(x-s)^3}{3} +$$

$$+ n A_s' (x-c)^2 + n A_s (d-x)^2$$

metodo del dimezzamenti

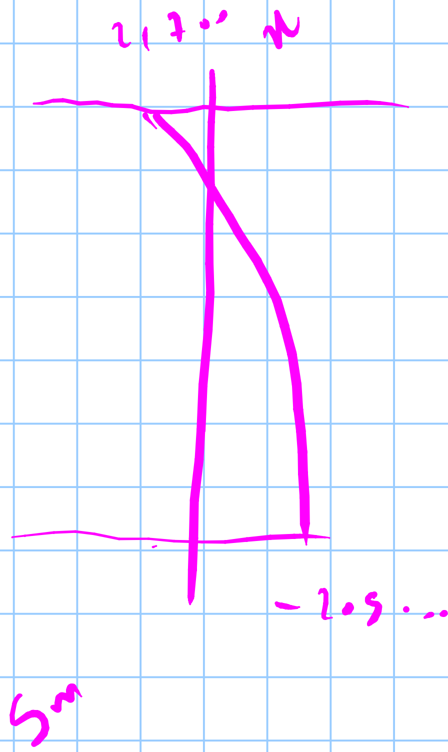


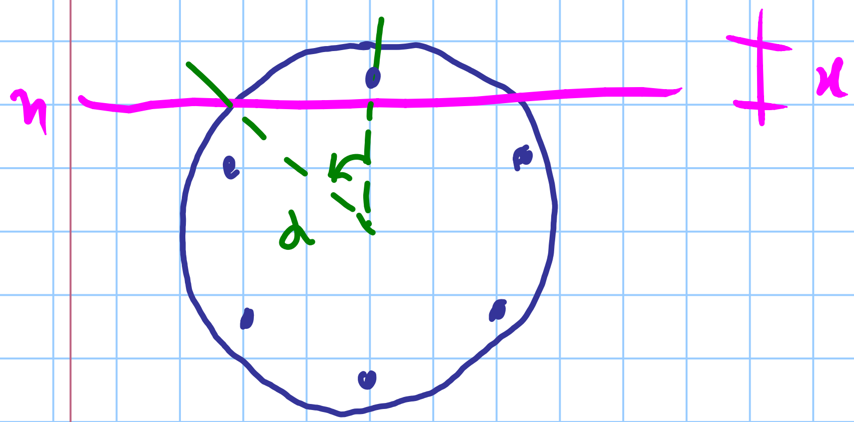
$S_n = 2178.$

-3345

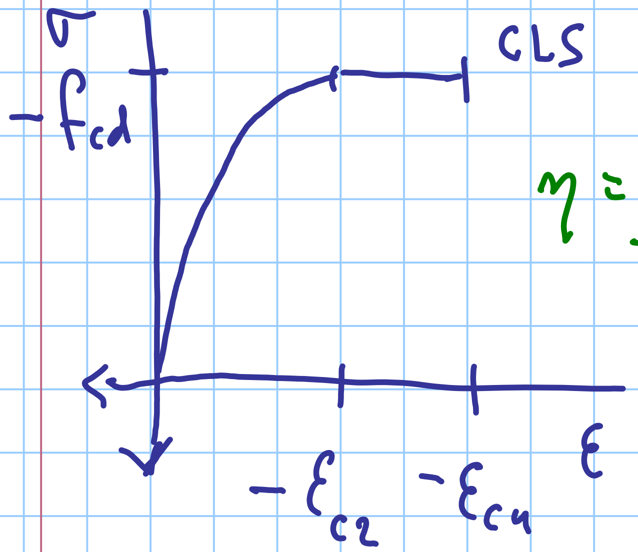
$S_n = -53220$

$S_n = -209220$

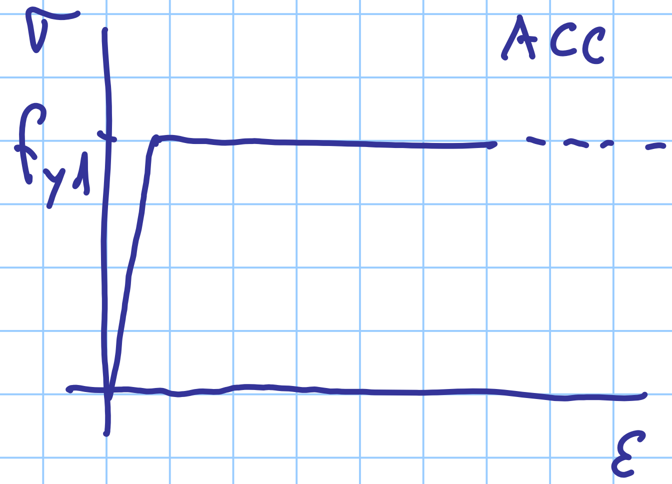



n
α
u

3° MODELLO DI COMPORTAMENTO



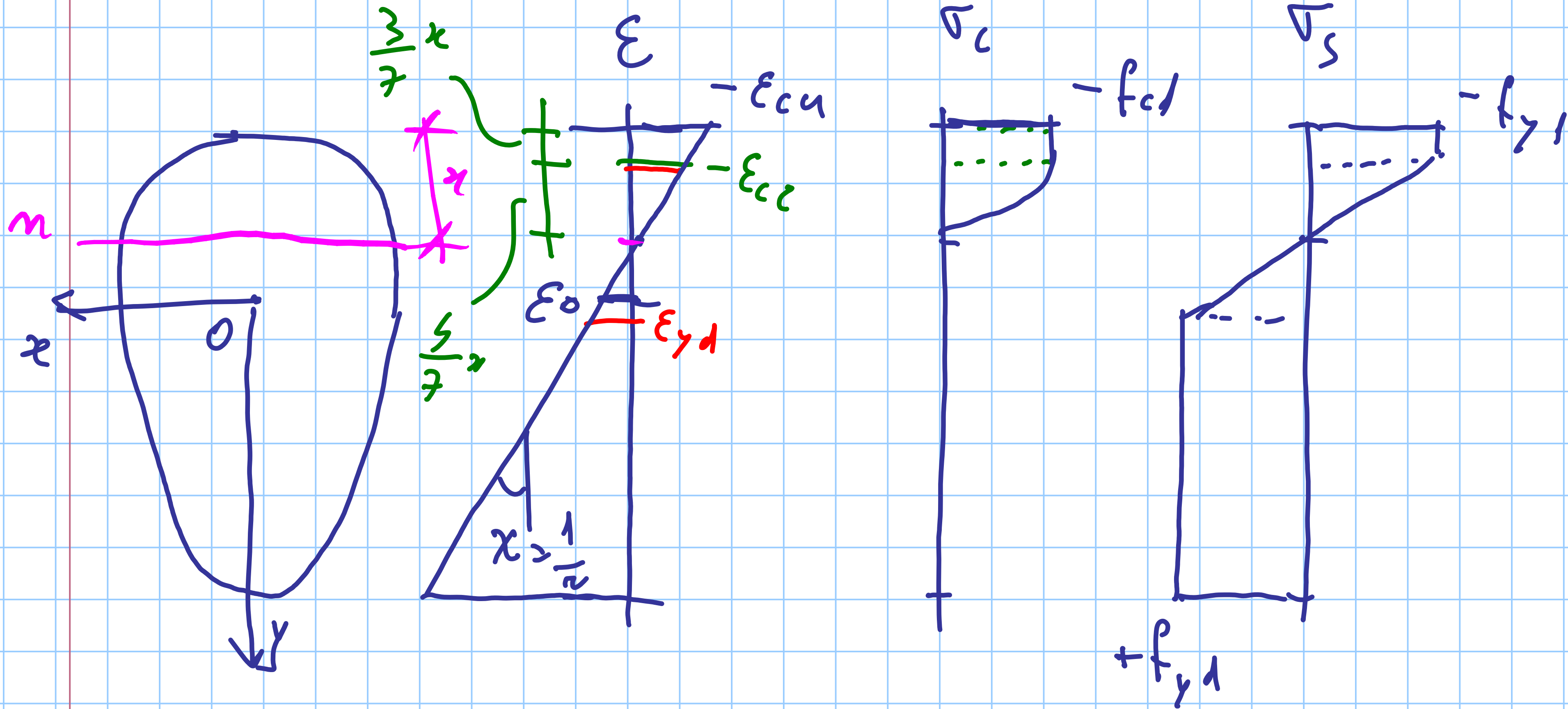
$$\eta = \frac{\varepsilon_c}{-\varepsilon_{c2}}$$



$$\sigma_c = -\eta(2-\eta) f_{cd}$$

$\varepsilon_{c2} = 2 \times 10^{-3}$

$\varepsilon_{cu} = 3{,}5 \times 10^{-3}$



$$\varepsilon_c = \varepsilon_0 + \chi y$$

$$\sigma = -\eta(2-\eta) f_{cd} =$$

$$= + \frac{\varepsilon_c}{\varepsilon_{c2}}\left(2 + \frac{\varepsilon_c}{\varepsilon_{c2}}\right) f_{cd}$$

$$\sigma = \frac{\varepsilon_0 + \chi y}{\varepsilon_{c2}} \left(2 + \frac{\varepsilon_0 + \chi y}{\varepsilon_{c2}} \right) f_{cd} =$$

$$= \left(\frac{\varepsilon_0}{\varepsilon_{c2}} + \frac{\chi}{\varepsilon_{c2}} y \right) \left(2 + \frac{\varepsilon_0}{\varepsilon_{c2}} + \frac{\chi}{\varepsilon_{c2}} y \right) f_{cd} =$$

$$= f_{cd} \left\{ \frac{\varepsilon_0}{\varepsilon_{c2}} \left(2 + \frac{\varepsilon_0}{\varepsilon_{c2}} \right) + \underbrace{\left[\frac{\chi}{\varepsilon_{c2}} \left(2 + \frac{\varepsilon_0}{\varepsilon_{c2}} \right) + \frac{\chi}{\varepsilon_{c2}} \frac{\varepsilon_0}{\varepsilon_{c2}} \right]}_{2 \frac{\chi}{\varepsilon_{c2}} \left(1 + \frac{\varepsilon_0}{\varepsilon_{c2}} \right)} y + \frac{\chi^2}{\varepsilon_{c2}^2} y^2 \right\}$$

$$\sigma_c = -f_{cd}\left(t_0 + t_1 y + t_2 y^2 \right)$$

$$\varepsilon_0 = -\varepsilon_{c2}$$

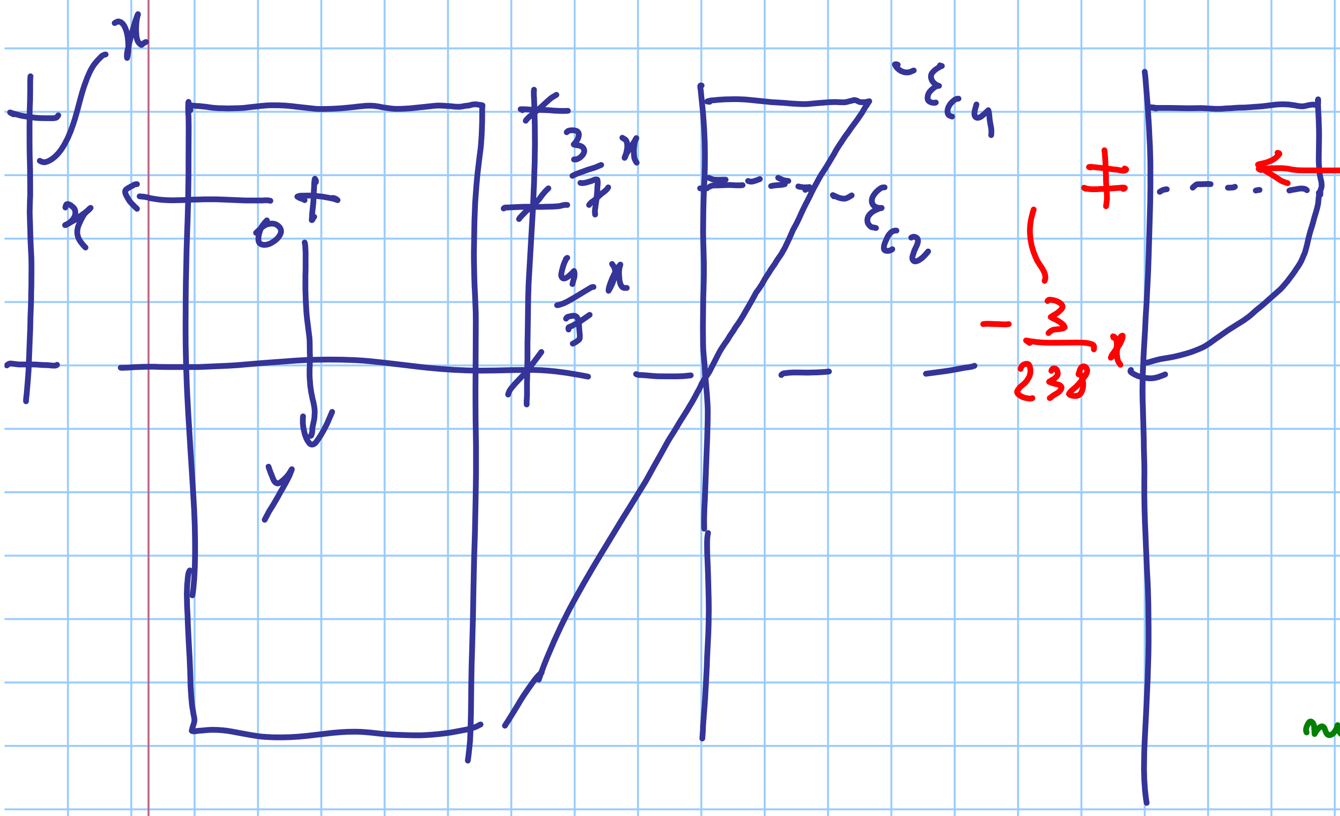
$$\chi = \frac{\varepsilon_{c2}}{\frac{4}{7} x}$$

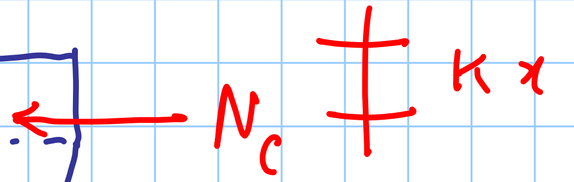
$$t_0 = -\frac{\varepsilon_0}{\varepsilon_{c2}}\left(2 + \frac{\varepsilon_0}{\varepsilon_{c2}}\right) = 1$$

$$N = \int \sigma \, b \, dy$$

$$t_1 = -2\frac{\chi}{\varepsilon_{c2}}\left(1 + \frac{\varepsilon_0}{\varepsilon_{c2}}\right) = 0$$

$$t_2 = -\frac{\chi^2}{\varepsilon_{c2}^2} = -\frac{49}{16\, x^2}$$





$$\varepsilon_c = 0 \rightarrow y_n = -\frac{\varepsilon_0}{\chi}$$

nel caso in esame $\quad y_n = \frac{4}{7}x$

$$\varepsilon_0 = -\varepsilon_{c2}$$

$$\varepsilon_c = \varepsilon_0 + \chi\, y \qquad y_{c2} = \frac{-\varepsilon_{c2} - \varepsilon_{c0}}{\chi}$$

$$\chi = \frac{\varepsilon_{c2}}{4/7\, x}$$

$$\varepsilon_c = -\varepsilon_{c2} \qquad y_{c2} = 0$$

$$N = \int \sigma \, dA = -f_{cd} \int_{y_{c2}}^{y_n} \Big(\underbrace{t_0}_{1} + \cancel{t_1 y} + \underbrace{t_2}_{-\frac{49}{16x^2}} y^2 \Big) b \, dy - f_{cd} \int_{y_{c,sup}}^{y_{c2}} b \, dy$$

$$dA = b \, dy$$

$$N = -f_{cd} b \left| y - \frac{49}{16x^2} \frac{y^3}{3} \right|_0^{\frac{4}{7}x} - f_{cd} b \Big| y \Big|_{-\frac{3}{7}x}^{6} =$$

$$-f_{cd} b \left[\frac{4}{7} x - \frac{49}{16x^2} \frac{1}{3} \left(\frac{4}{7} x \right)^3 + \frac{3}{7} x \right]$$

$$N = -b f_{cd}\left[x - \frac{4}{21}x\right] = -\underbrace{\frac{17}{21}}_{0.810} b\, x\, f_{cd}$$

$$N_c = -f_{cd}\ \beta\ A_c$$

β ← 0,81 coefficiente di riempimento

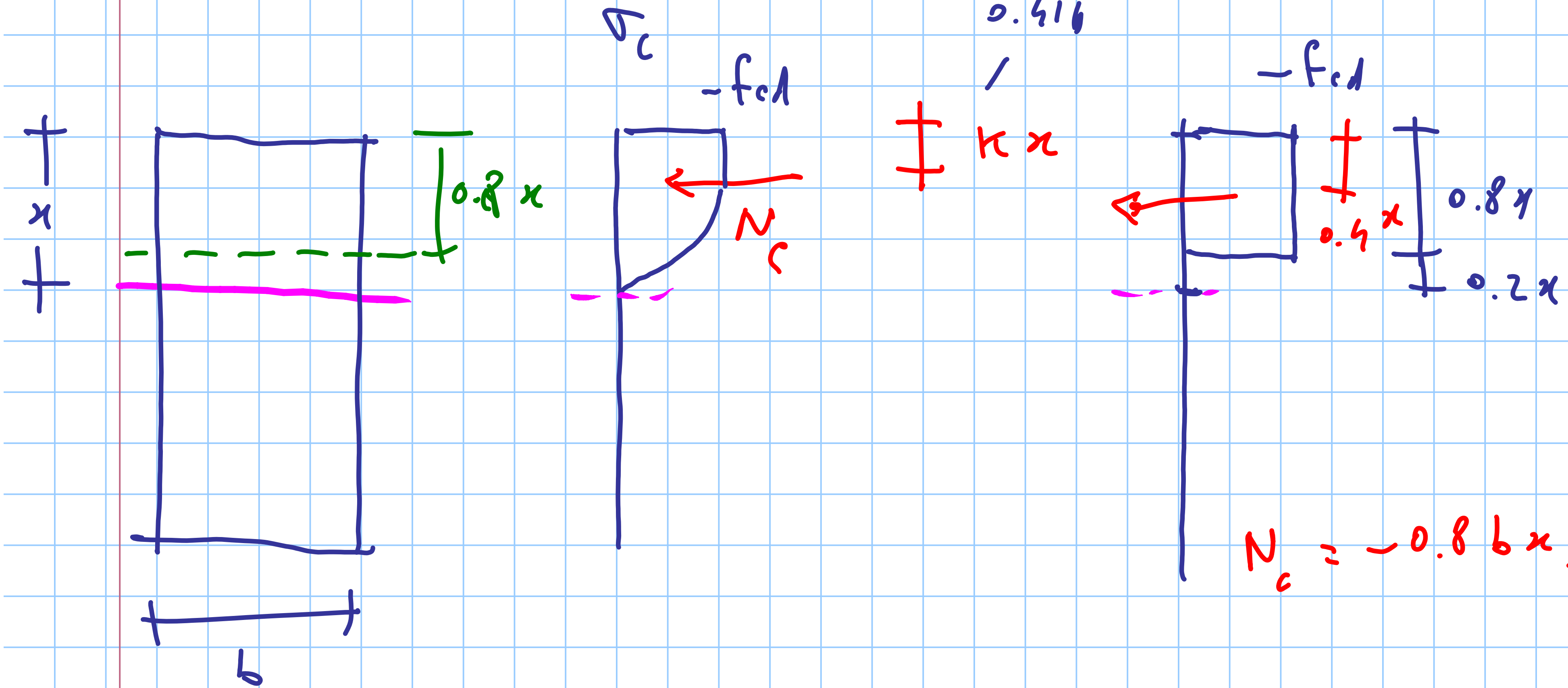
$$M = \int \sigma y\, dA = \frac{1}{98} b x^2 f_{cd}$$

$$\frac{M}{N} = \frac{\frac{1}{98}\,\cancel{b}\,x^{\cancel{2}}\,\cancel{f_{c1}}}{-\frac{17}{21}\,\cancel{b}\,\cancel{x}\,\cancel{f_{c1}}} = -\frac{3}{17\times 14}\,x = -\frac{3}{238}\,x$$

$$\frac{3}{7}x - \frac{3}{238}x = \frac{99}{238}x \simeq 0.416\,x$$

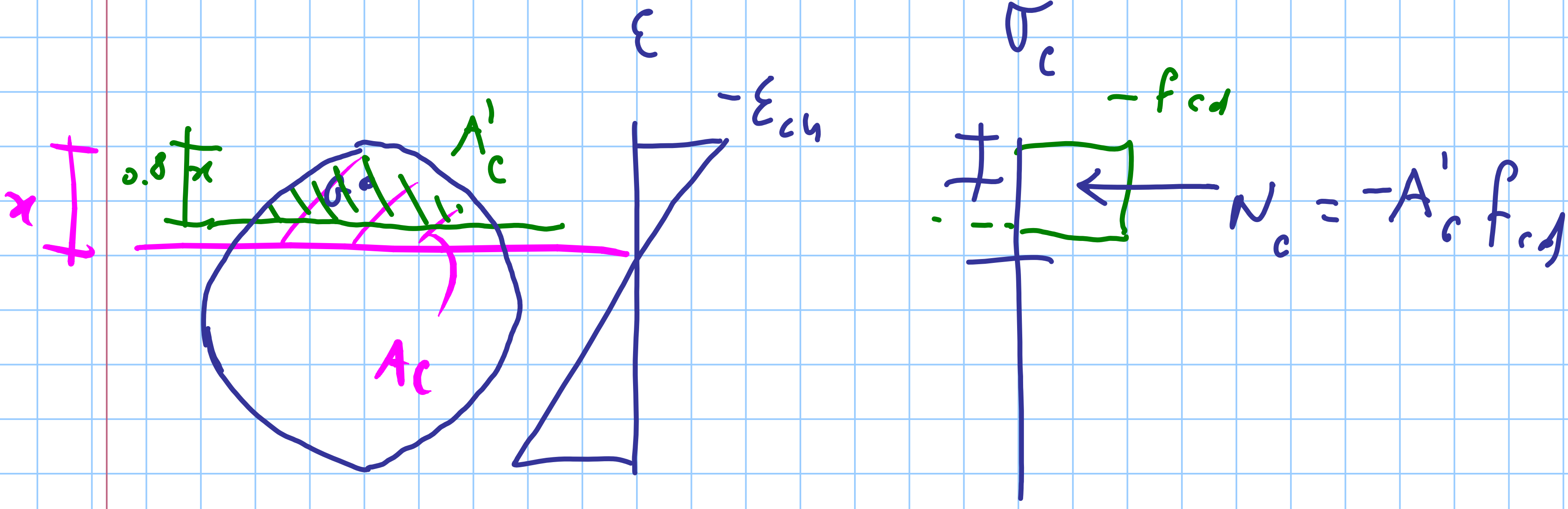
$K\,x$

0.416



$$N_c = -0.8\, b\, x\, f_{cd}$$

$$N_c = -\underbrace{\beta}_{0.81}\, b x\, f_{cd}$$



coeff. riempimento $\rightarrow \dfrac{A'_c}{A_c}$

area in verde

area in zona