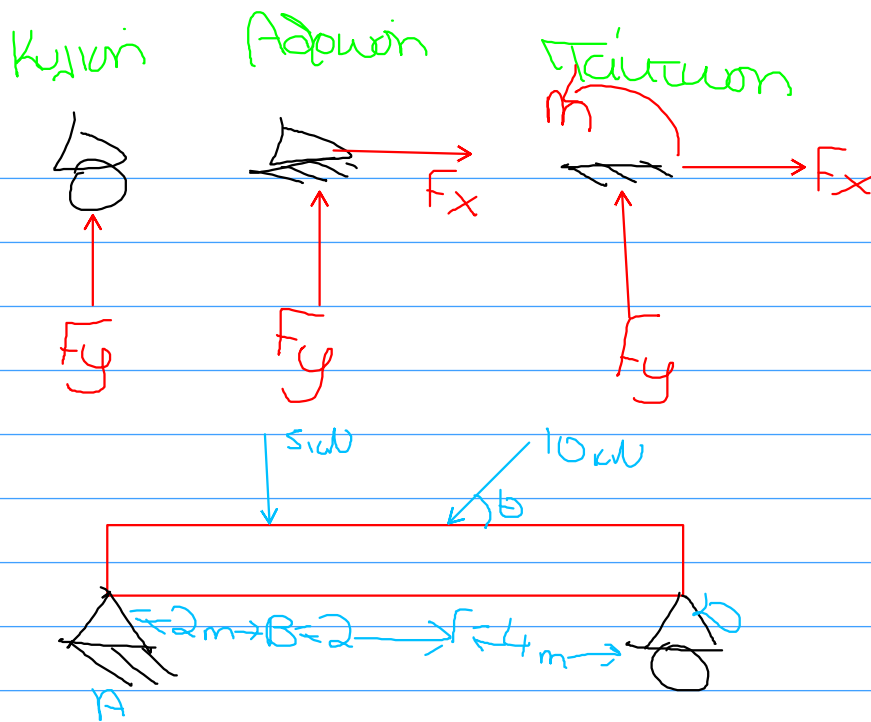
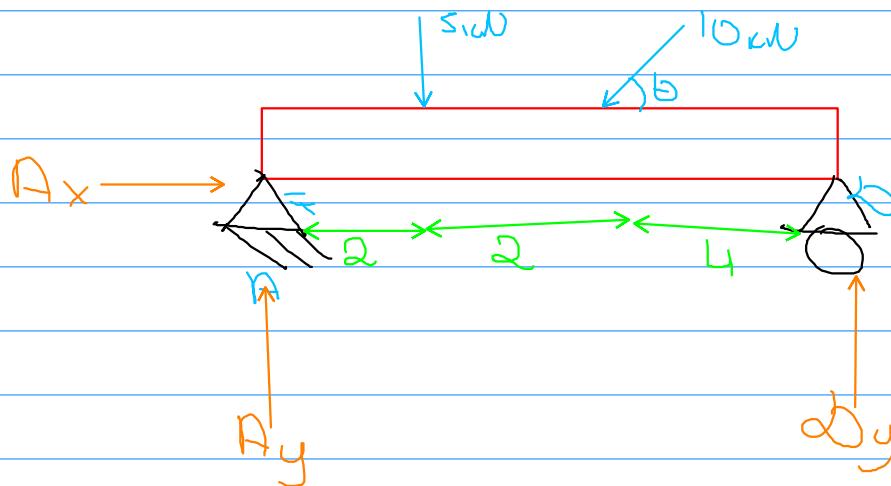
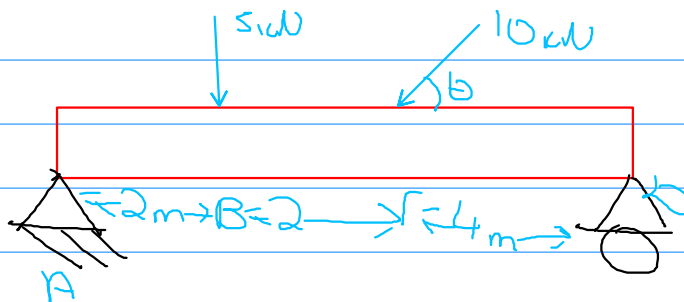


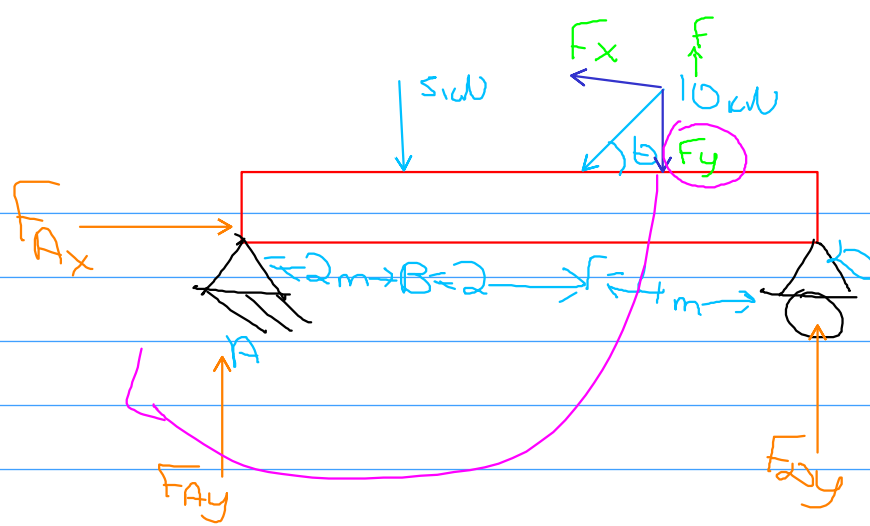


Βήμα 1^ο Υαχνώ ισοζύγιο αγκυρώς Συναγής εχν



Βήμα 2^ο Υαχνολογίζω τις Συναγής με την χρίση των Εξίσωτων ισορρογίας





$$y = \sin \theta = 0,6$$

$$x = \cos \theta = 0,8$$

Kavay carym Sarypaw

$$F_x = F \cdot \cos \theta$$

$$F_y = F \cdot \sin \theta$$

$$\Rightarrow F_x = 8 \text{ kN}$$

$$\Rightarrow F_y = 6 \text{ kN}$$

$$(\rightarrow) \sum F_x = 0$$

$$A_x - 8 \text{ kN} = 0$$

$$A_x = 8 \text{ kN}$$

$$(\uparrow) \sum F_y = 0$$

$$A_y - 6 - 5 + 2 \cdot 2 = 0$$

$$A_y + 2 = 11 \quad (*)$$

$$(\curvearrowright) \sum M_A = 0$$

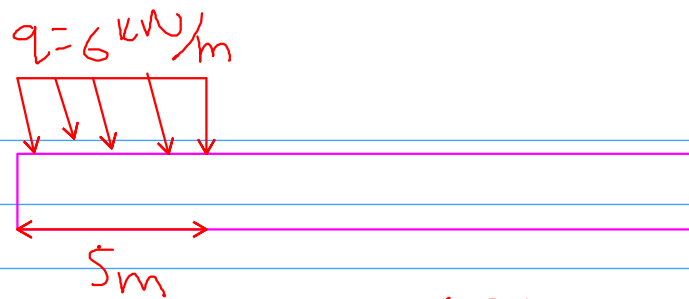
$$5 \cdot 2 - 2 \cdot 2 \cdot 8 + 6 \cdot 4 = 0$$

$$8 \cdot 2 = 10 + 24$$

$$2 = 4,25 \text{ kN}$$

$$\Rightarrow A_y = 11 - 4,25$$

$$A_y = 6,75 \text{ kN}$$



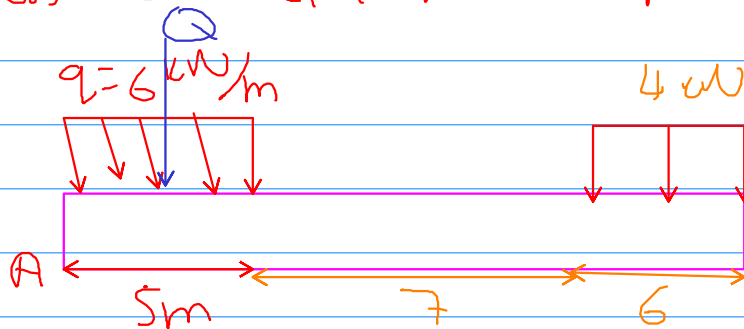
Δυναμική κατανομή (Q)

$$Q = q \cdot \text{την απόσταση}$$

$$Q = 6 \cdot 5$$

$$Q = 30\text{ kN}$$

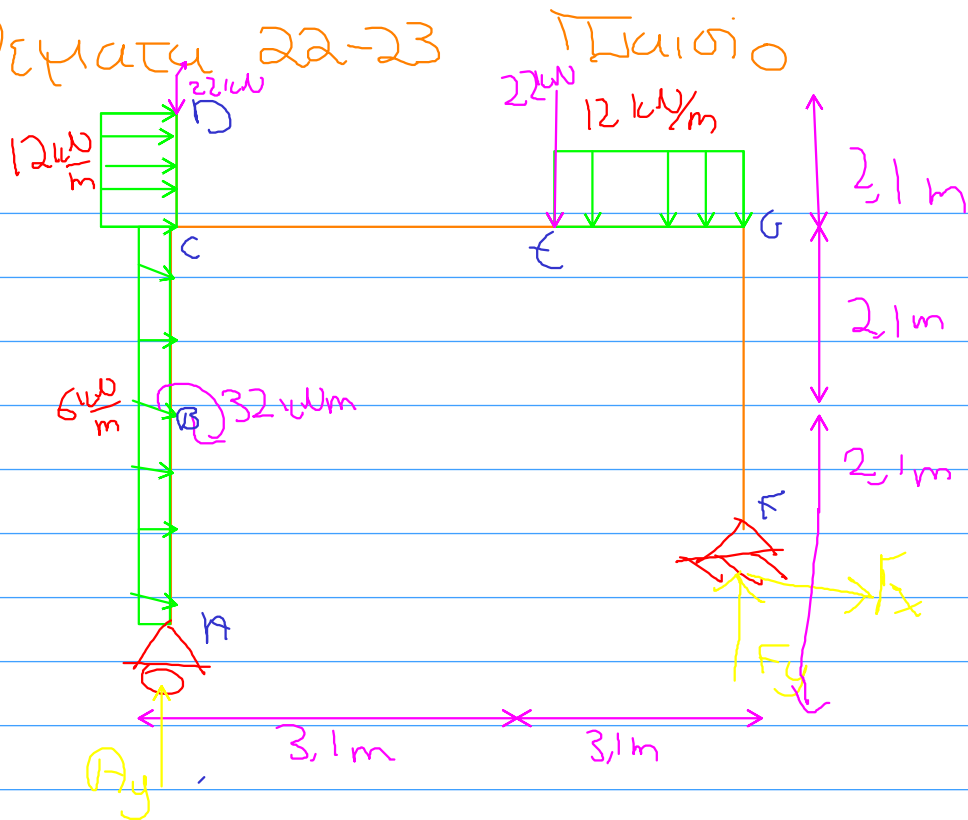
Ροπή κατανομής M



$$M_A = 24 \cdot (2+3)$$

$$(\rightarrow) M_A = Q \cdot \text{την μόν απόσταση} \\ \text{Ψίξιμο στο σημείο} \\ \text{Ψού}$$

Θεματάκι 22-23



Ερωτήματα

(+) $\sum F_x = 0$

$$F_x + 6 \cdot 4.2 + 12 \cdot 2.1 = 0$$

$$F_x = -50.4 \text{ kN} \Rightarrow \text{από την φάση} (\leftarrow)$$

(+) $\sum F_y = 0$

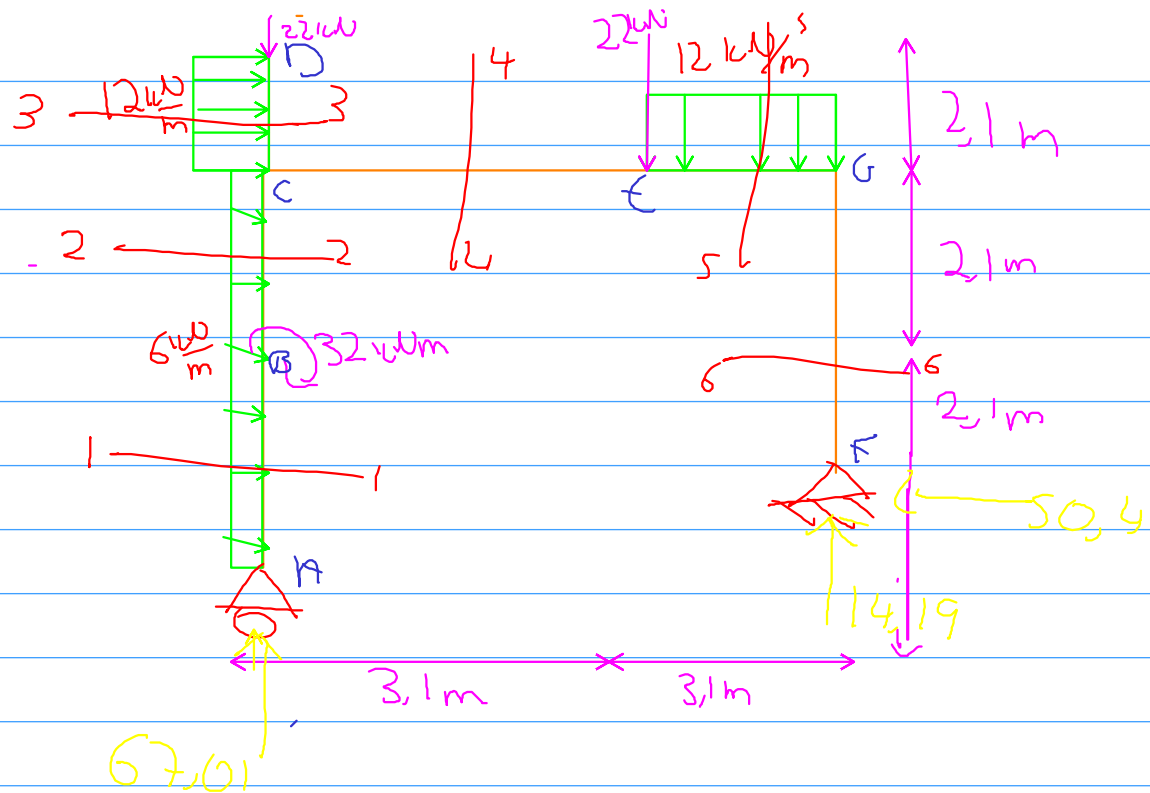
$$A_y - 22 - 22 - 12 \cdot 3.1 + F_y = 0$$

$$A_y + F_y = 86.2 \Rightarrow F_y = 14.19 \text{ kN}$$

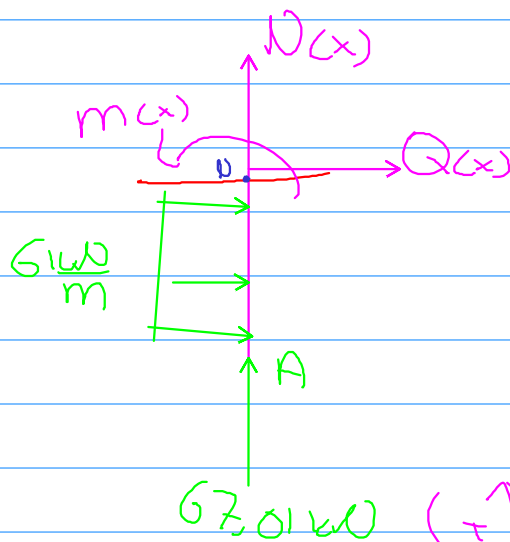
(+) $\sum M_F = 0$

$$A_y \cdot 6.2 + 6 \cdot 2.1 + 32 + 12 \cdot \left(\frac{2.1}{2} + 2.1 + 2.1 \right) - 22 \cdot 6.2 - 22 \cdot 3.1 - 12 \cdot 3.1 = 0$$

$$A_y = 67.01 \text{ kN}$$



Topen I-I n AB uai ewilgw to uaiw ugos
N(0.5 x 2.1



$$(\rightarrow) \sum F_x = 0$$

$$6 \cdot x + Q(x) = 0$$

$$Q(x) = -6x$$

$$\text{f} \text{a } x=0 \Rightarrow Q(0) = 0 \text{ kN}$$

$$\text{f} \text{a } x=2.1 \Rightarrow Q(2.1) = -6 \cdot 2.1 = -12.6 \text{ kN}$$

$$67.01 \text{ kN} \quad (\uparrow) \sum F_y = 0$$

$$67.01 + N = 0$$

$$N = -67.01 \text{ kN}$$

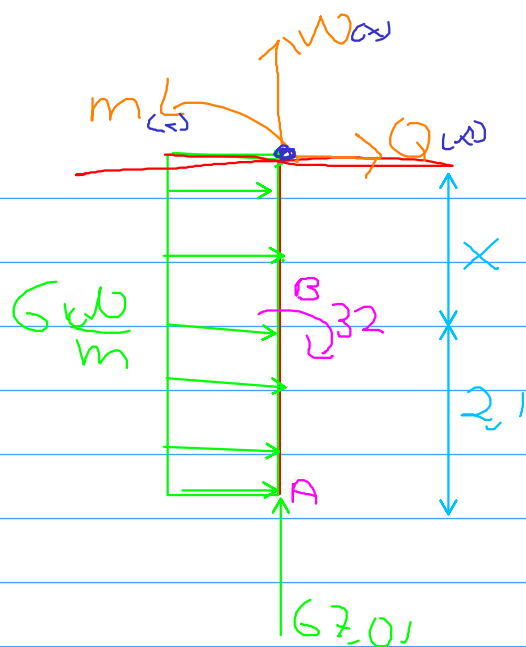
$$(\rightarrow) \sum M = 0$$

$$-6 \cdot x \cdot \frac{x}{2} - M(x) = 0$$

$$M(x) = -3x^2$$

$$M(0) = 0 \text{ kNm}$$

$$M(2.1) = -13.23 \text{ kNm}$$



Τομή 2-2 ή ΒΒ εσωτερικά
κατω μέρος

$$(\rightarrow) \sum F_x = 0$$

$$G \cdot (2,1 + x) + Q(x) = 0$$

$$Q(x) = -G(2,1 + x)$$

$$Q(0) = -12,6 \text{ kN}$$

$$Q(2,1) = -25,2 \text{ kN}$$

$$(\uparrow) \sum F_y = 0$$

$$G_{7,01} + N(x) = 0$$

$$N(x) = -G_{7,01} \text{ kN}$$

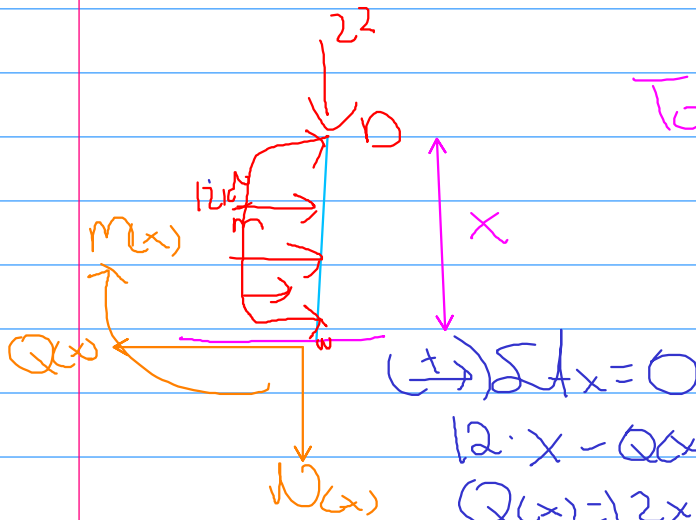
$$(\rightarrow) \sum M_x = 0$$

$$-m(x) + 32 - G(2,1 + x) \cdot \frac{(2,1 + x)}{2} = 0$$

$$m(x) = 32 - G(2,1 + x) \frac{(2,1 + x)}{2}$$

$$m(0) = 5,54 \text{ kNm}$$

$$m(2,1) = -73,84 \text{ kNm}$$



Τομή 3-3 ή ΓΓ εσωτερικά
ωραίο μέρος
 $0 \leq x \leq 3,1 \text{ m}$

$$(\rightarrow) \sum F_x = 0$$

$$12 \cdot x - Q(x) = 0$$

$$Q(x) = 12x$$

$$Q(0) = 0 \text{ kN}$$

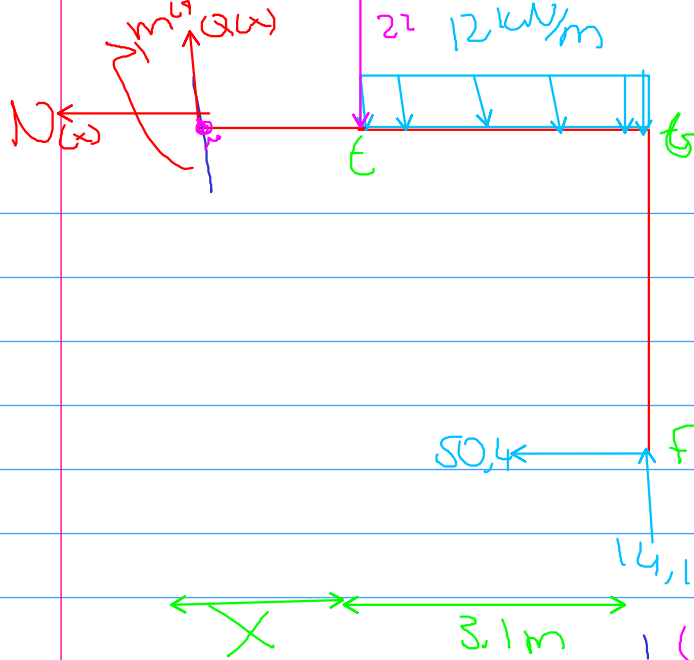
$$Q(3,1) = 37,2 \text{ kN}$$

$$(\rightarrow) \sum M_x = 0$$

$$+m(x) + 12 \cdot x \cdot \frac{x}{2} = 0$$

$$m(0) = 0 \text{ kNm}$$

$$m(3,1) = -26,46 \text{ kNm}$$

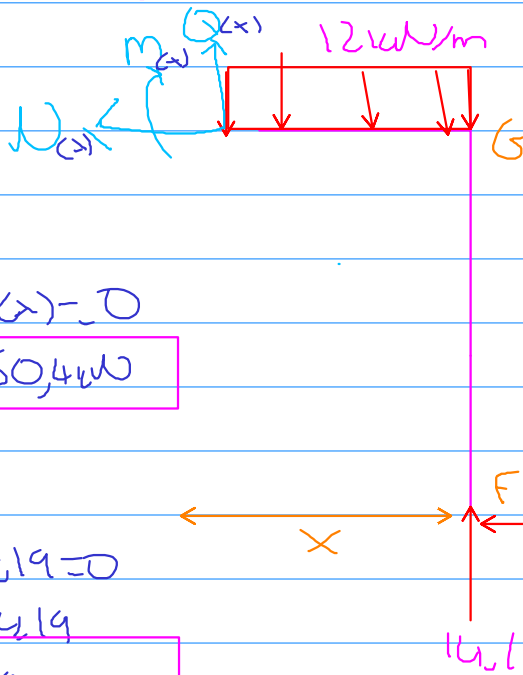


Τομή 4-4 εσωτερικό
 το $\Sigma \vec{F}_i = 0$
 $0 \leq x \leq 3.1$

$$\begin{aligned} \sum F_x = 0 \\ -50.4 - N(x) = 0 \\ N(x) = -50.4 \text{ kN} \end{aligned}$$

$$\begin{aligned} \sum M = 0 \\ 14.19 - 12 \cdot 3.1 - 22 + (Q(x) \cdot 2.1) = 0 \\ Q(x) = 45.01 \text{ kN} \end{aligned}$$

$$\begin{aligned} M(0) &= -119.5 \text{ kNm} \\ M(3.1) &= -259.04 \text{ kNm} \end{aligned}$$



Τομή 5-5 εσωτερικό δεξιά
 $0 \leq x \leq 3.1$

$$\begin{aligned} \sum F_x = 0 \\ -50.4 - N(x) = 0 \\ N(x) = -50.4 \text{ kN} \end{aligned}$$

$$\begin{aligned} \sum M = 0 \\ M(x) + 12 \cdot x \cdot \frac{x}{2} + 50.4 \cdot 2.1 - 14.19 \cdot x = 0 \end{aligned}$$

$$\begin{aligned} \sum F_y = 0 \\ Q(x) - 12 \cdot x + 14.19 = 0 \\ Q(x) = 12x - 14.19 \end{aligned}$$

$$\begin{aligned} Q(0) &= -14.19 \text{ kN} \\ Q(3.1) &= 23.01 \text{ kN} \end{aligned}$$

$$\begin{aligned} M(0) &= -105.84 \\ M(3.1) &= -119.54 \end{aligned}$$

