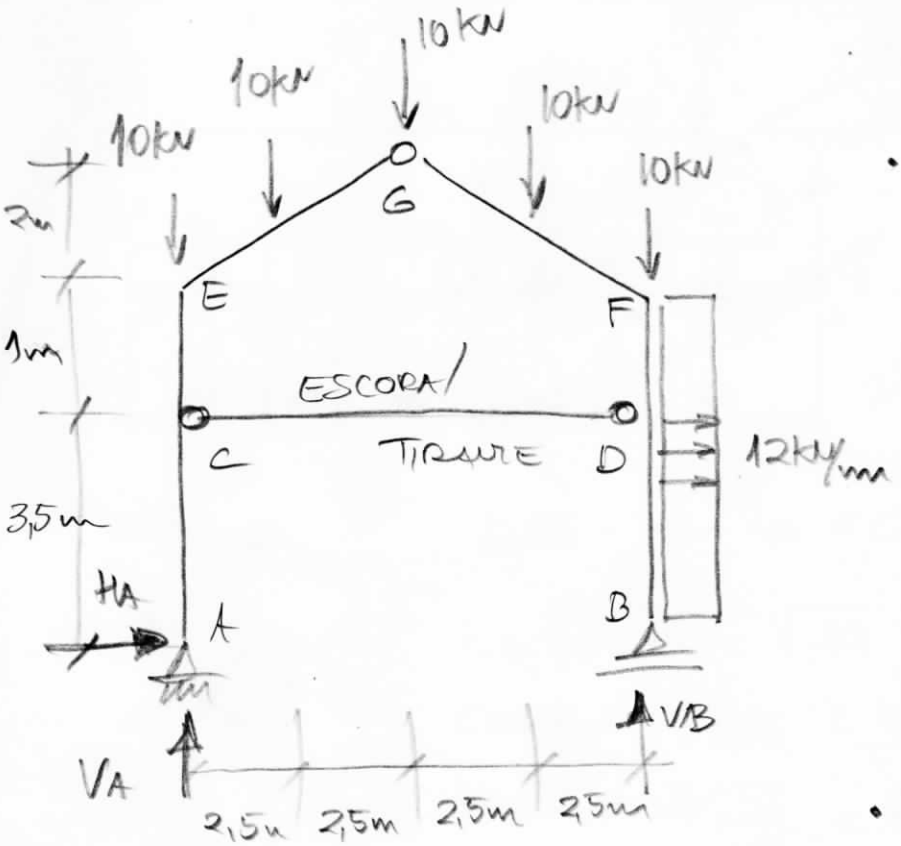
TE1-6a-2




(a) RAS:

• $\sum M_A = 0 \circlearrowleft \oplus$

$V_B \times 10 - 10 \times 2,5 - 10 \times 5 - 10 \times 7,5 - 10 \times 10 - 12 \times 4,5 \times \frac{4,5}{2} = 0$

$V_B = \frac{1}{10}(25 + 50 + 75 + 100 + 6 \times 4,5^2)$

$V_B = 37,15\,kN \uparrow$

• $\sum F_V = 0 \uparrow \oplus$

$V_A + 37,15\,kN - 50\,kN = 0 \rightsquigarrow V_A = 50 - 37,15 = 12,85\,kN \uparrow$

• $\sum F_H = 0 \quad 12\,kN/m \times 4,5\,m + H_A = 0$

$H_A = 54\,kN \leftarrow$

* AS REAÇÕES NECESSARIAMENTE NÃO SÃO INFLUENCIADAS PELOS QUADROS.

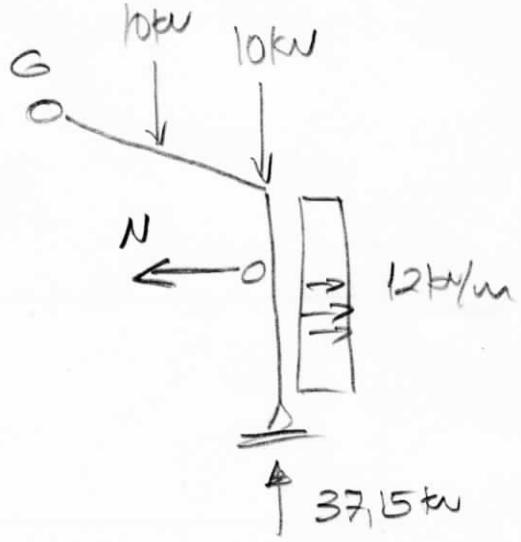
(b) ESCORA OU TIRANTE ?

$\sum M_G^{DIR} = 0 \circlearrowright \oplus$

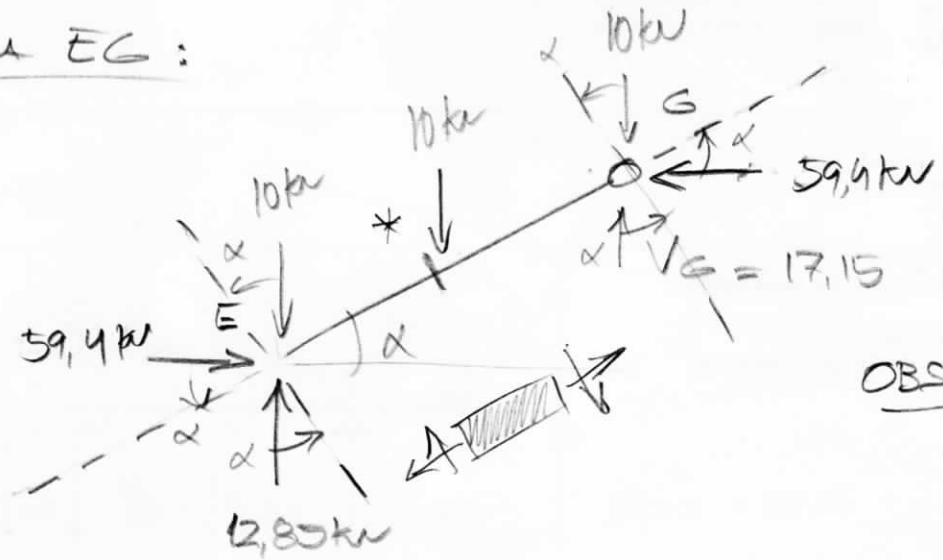
$10 \times 2,5 + 10 \times 5 + N \times 3 - 12 \times 4,5 \times \left(2 + \frac{4,5}{2}\right) - V_B \times 5 = 0$

$N = \frac{1}{3}(-25 - 50 + 229,5 + 5 \times 37,15)$

$N = 113,4\,kN$ // TIRANTE



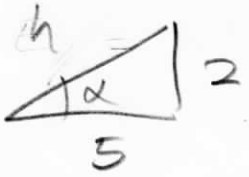
BARRA EG:




113,4
54
59,4

OBS: MOMENTO FLETOR DESPREZADO

$\Sigma F_V = 0_{EG}$ (+↑) $\quad 12,85 - 30 + V_G = 0 \quad V_G = 17,15$




$h = \sqrt{25+4} = \sqrt{29}$

$\cos\alpha = 5/\sqrt{29} = 0,9285$

$\text{sen}\,\alpha = 2/\sqrt{29} = 0,3714$

$E_{//} = -59,4\cos\alpha + 10\,\text{sen}\,\alpha - 12,85\,\text{sen}\,\alpha$

$= -59,4.0,9285 - 2,85.0,3714 \quad = -56,21\,kN$

$G_{//} = -59,4\cos\alpha - 10\,\text{sen}\,\alpha + 17,5\,\text{sen}\,\alpha$

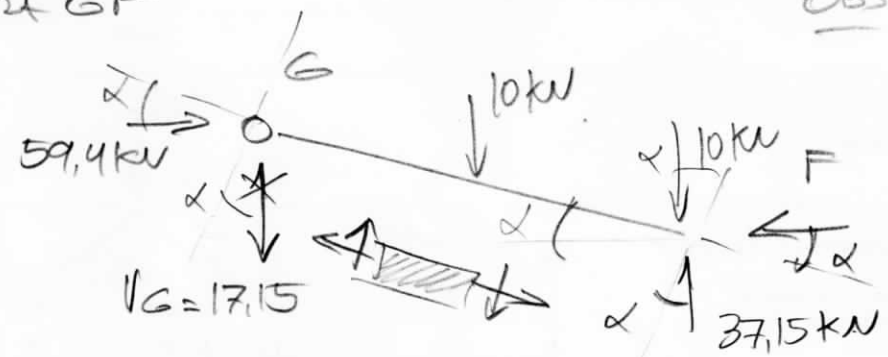
$= -59,4.0,9285 + 7,15.0,3714 \quad = -52,50\,kN$

$*_{//} = -56,21 + 10.\text{sen}\,\alpha$

$-56,21 + 10.0,3714 = -52,50\,kN$

BARRA GF

OBS: MOMENTO FLETOR DESPREZADO




$113,4 - 54 = 59,4\ kN$

$\Sigma F_V = 0 \quad V_G - 20 + 37,15 = 0 \quad V_G = -37,15 + 20 = -17,15$

$$G_{//} = -59,4\cos\alpha - 17,15\,\text{sen}\alpha =$$
$$-59,4 \cdot 0,9285 - 17,15 \cdot 0,3714 = -61,52\ kN$$

$$F_{//} = -59,4\cos\alpha + 10\,\text{sen}\alpha - 37,15\,\text{sen}\alpha$$
$$-59,4 \times 0,9285 - 27,15 \times 0,3714 = -65,23\ kN$$

(N) [kN]

