

Cuerpo AB

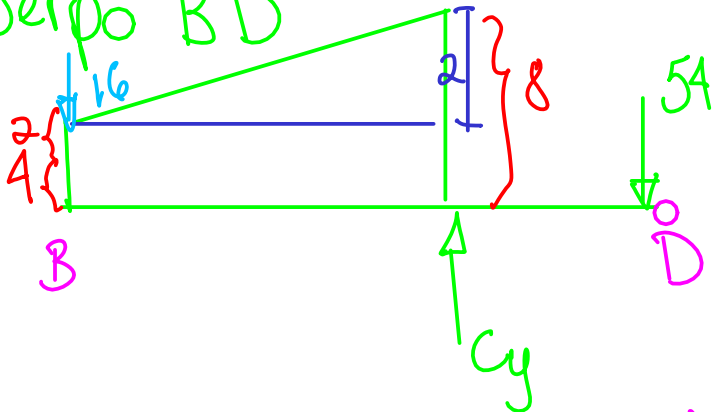
$$\sum M_B = (6)(4)\left(\frac{6}{2}\right) + \frac{1}{2}(6)(2)\left(\frac{1}{3} \cdot 6\right) - A_y(6) = 0$$

$$A_y = 14 \text{ kN} \uparrow$$

$$\sum F_y = -6(4) - \frac{1}{2}(6)(2) + 14 + B_y = 0$$

$$B_y = 16 \text{ kN} \uparrow$$

Cuerpo BD



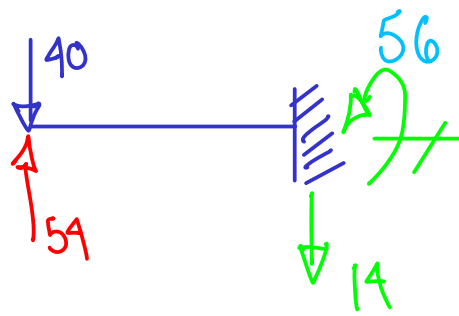
$$\sum M_D = 16(10) + (6)(6)(3+4) + \frac{1}{2}(6)(2)\left(\frac{1}{3} \cdot 6 + 4\right) - C_y(4) = 0$$

$$C_y = 112 \text{ kN} \uparrow$$

$$\sum F_y = -16 - (6)(6) - \frac{1}{2}(6)(2) + 112 - D_y = 0$$

$$D_y = 54 \text{ kN}$$

# Cuerpo DE



$$\sum F_y = -40 + 59 - E_y = 0$$

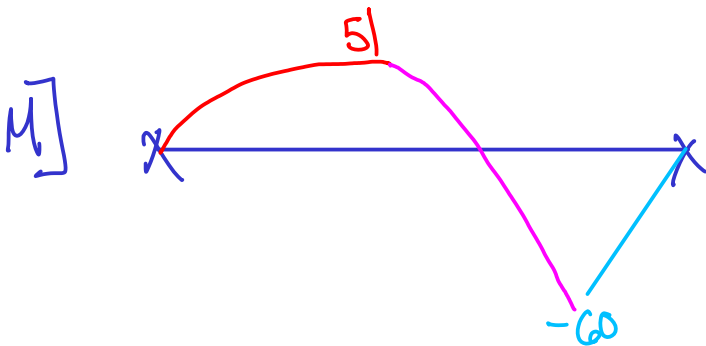
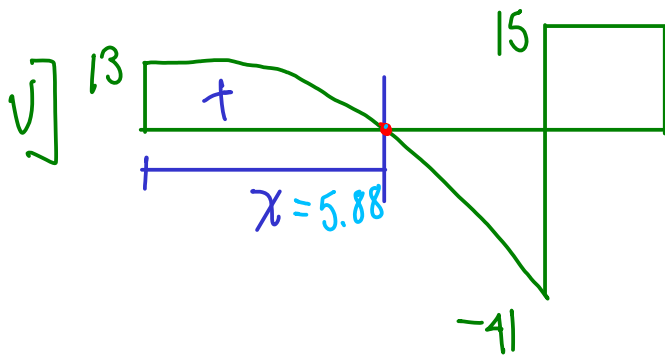
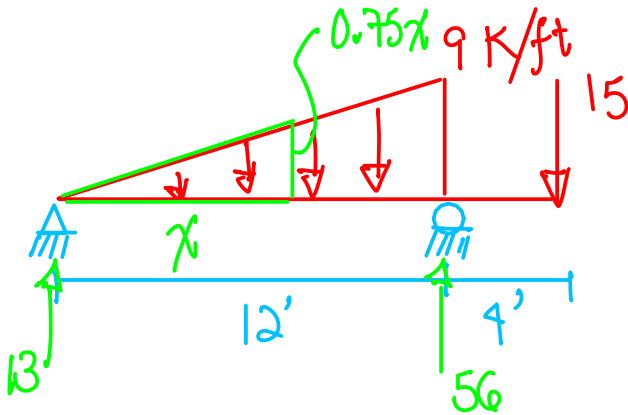
$$E_y = 19 \downarrow$$

$$\sum M_E = M_E + 40(4) - 59(4) = 0$$

$$M_E = 56 \text{ kNm} \curvearrowleft$$

## Diagramas de Fuerzas Internas (A, V, M)

II



$$y = mx + b$$

$$w = \left( \frac{9-0}{12-0} \right) x + 0$$

$$w = 0.75x$$

$$13 - \frac{1}{2} (12)(9) = -41$$

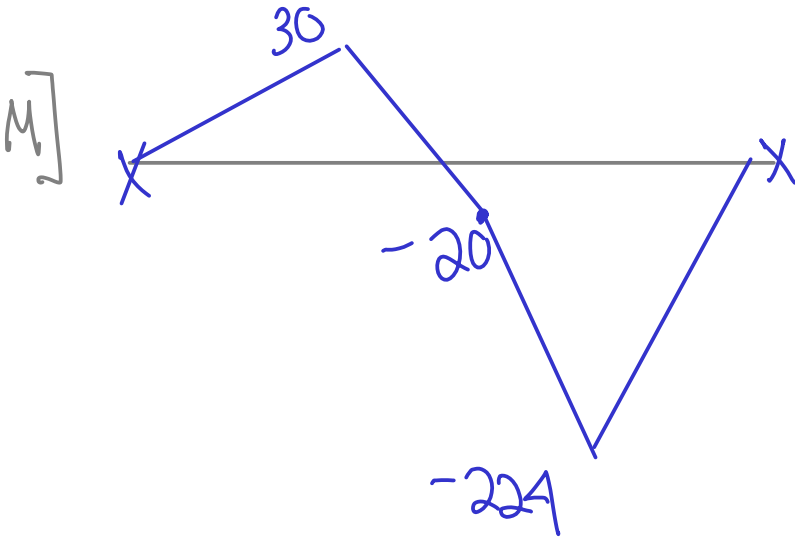
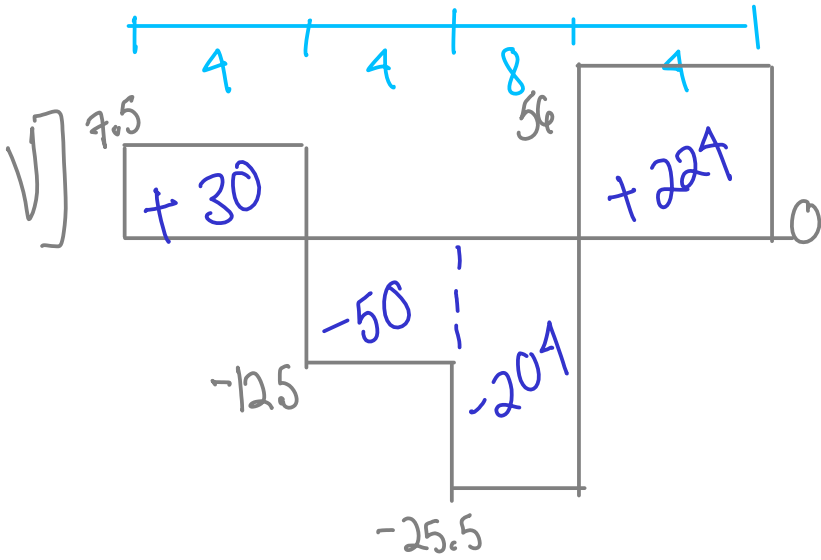
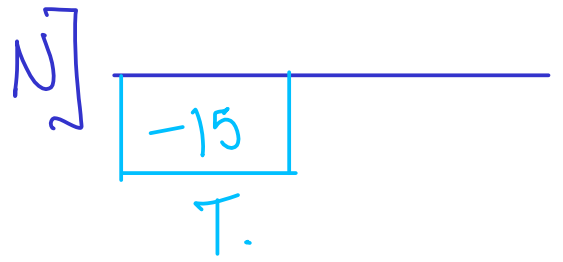
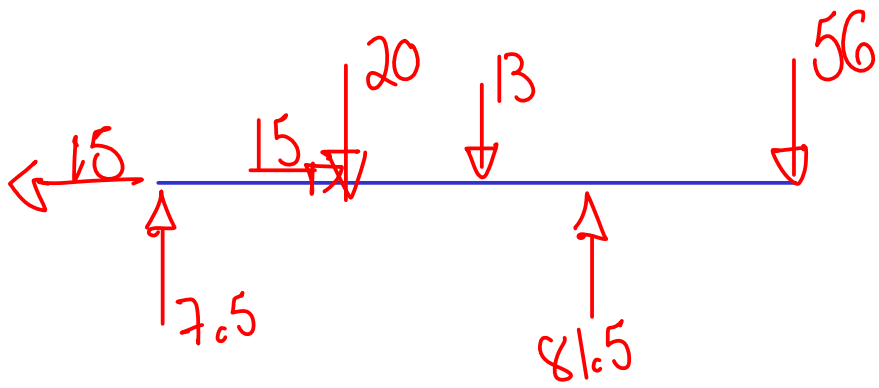
$$-41 + 56 = 15$$

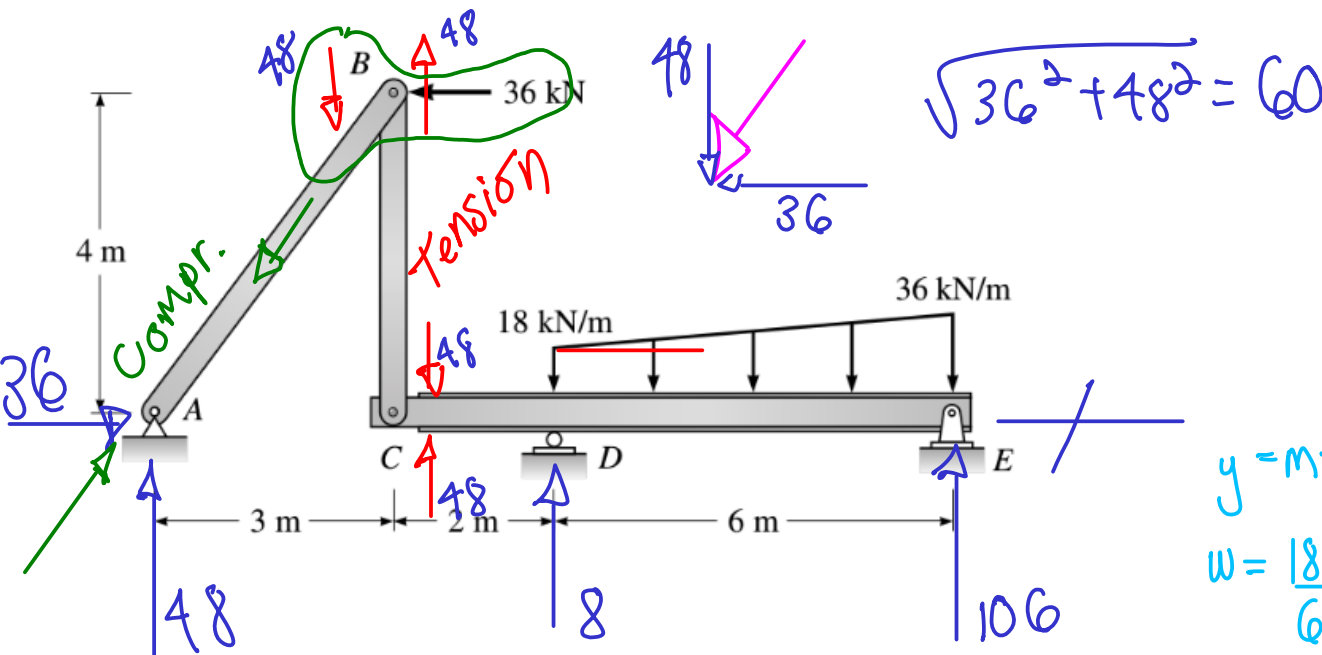
$$\frac{1}{2} (x)(0.75x) = 13$$

$$x = 5.88'$$

$$\frac{2}{3} bh = \frac{2}{3} (5.88)(13) = 51 \text{ kft}$$

$$(15)(4) = 60$$





$$\sqrt{36^2 + 48^2} = 60$$

$$y = mx + b$$

$$w = \frac{18-0}{6-0}x + 0$$

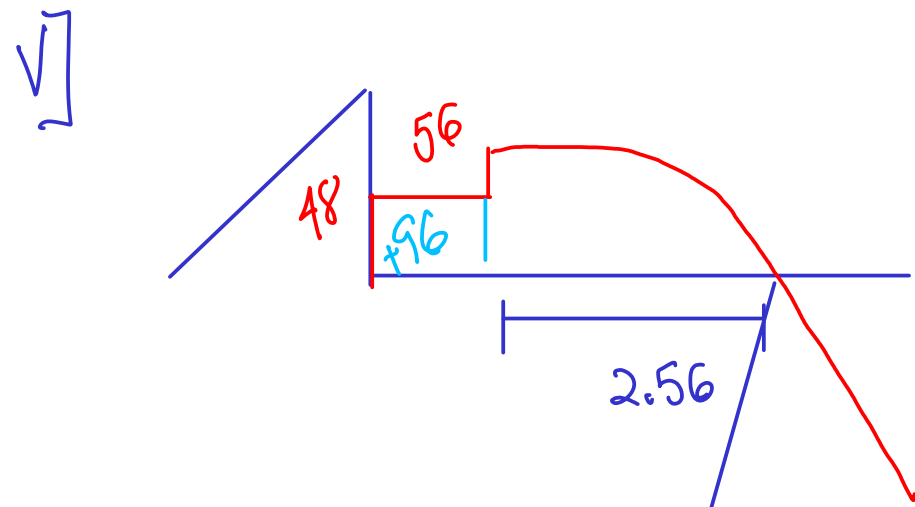
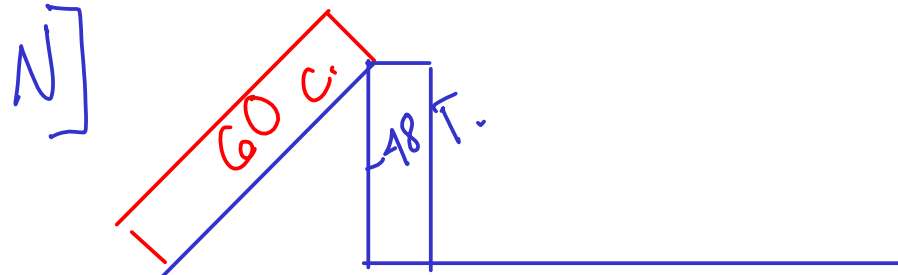
$$w = 3x$$

$$A_T = \frac{1}{2}(x)(3x)$$

$$A_T = 1.5x^2$$

$$A_R = (x)(18) = 18x$$

$$A_{T_{rep}} = 18x + 1.5x^2$$

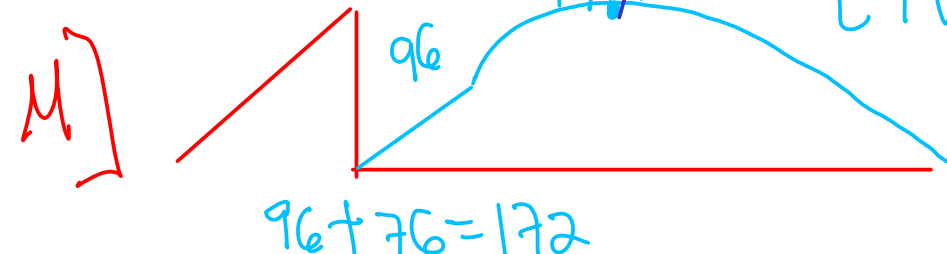


$$\frac{1}{2}(18+36)(6) = -162$$

$$56 - 162 = -106$$

$$V \rightarrow 56 - 18x - 1.5x^2 = 0$$

$$x = \begin{cases} 2.56 \\ -14.56 \end{cases}$$



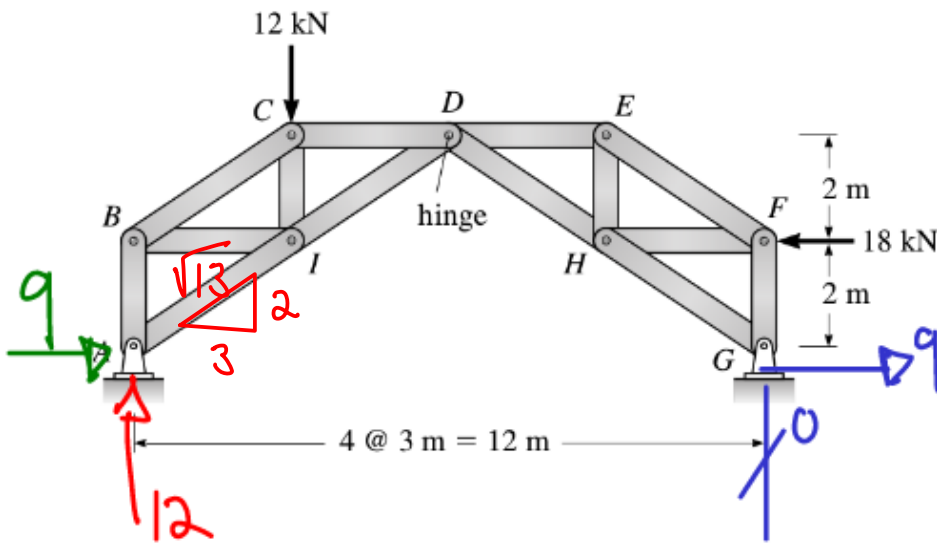
$$\int_0^{2.56} (56 - 18x - 1.5x^2) dx = 76$$

$$96 + 76 = 172$$

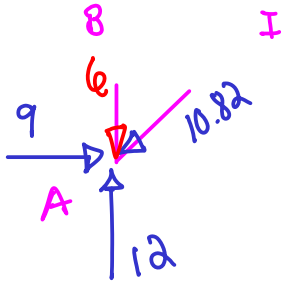
$$\int_{2.56}^6 56 - 18x - 1.5x^2 dx = -172$$

$$\int_{2.56}^6 56 - 18 \cdot x - 1.5 \cdot x^2 dx = -171.989$$

$$172 - 172 = 0$$



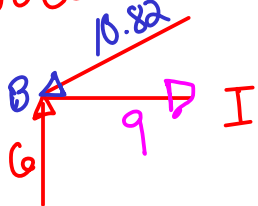
Nodo A



$$\sum F_x = 9 - F_{AI} \left( \frac{3}{\sqrt{13}} \right) = 0 \quad F_{AI} = 10.82 \text{ comp}$$

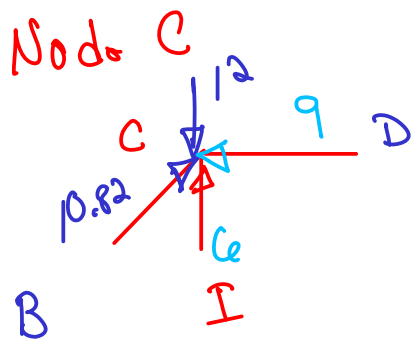
$$\sum F_y = 12 - F_{AB} - 10.82 \left( \frac{2}{\sqrt{13}} \right) = 0 \quad F_{AB} = 6 \text{ comp.}$$

Nodo B



$$\sum F_y = 6 - F_{BC} \left( \frac{2}{\sqrt{13}} \right) = 0 \quad F_{BC} = 10.82 \text{ compr.}$$

$$\sum F_x = -10.82 \left( \frac{3}{\sqrt{13}} \right) + F_{BI} = 0 \quad F_{BI} = 9 \text{ Tens.}$$

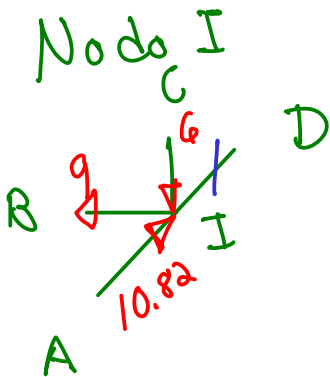


$$\sum F_y = -12 + 10.82 \left( \frac{2}{\sqrt{13}} \right) + F_{IC} = 0$$

$$F_{IC} = 6 \text{ compr.}$$

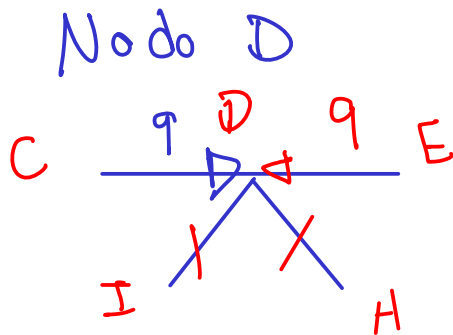
$$\sum F_x = 10.82 \left( \frac{3}{\sqrt{13}} \right) - F_{CD} = 0$$

$$F_{CD} = 9 \text{ compr.}$$



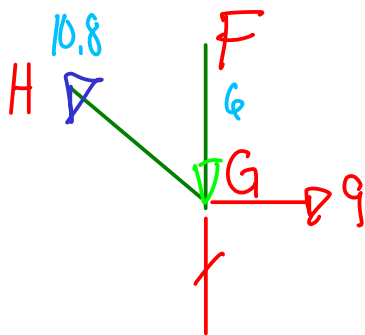
$$\sum F_x = -9 + 10.82 \left( \frac{3}{\sqrt{13}} \right) = 0$$

$$\sum F_y = -6 + 10.82 \left( \frac{2}{\sqrt{13}} \right) = 0$$



$$\sum F_x = 9 - F_{DE} = 0 \therefore F_{DE} = 9$$

Node G

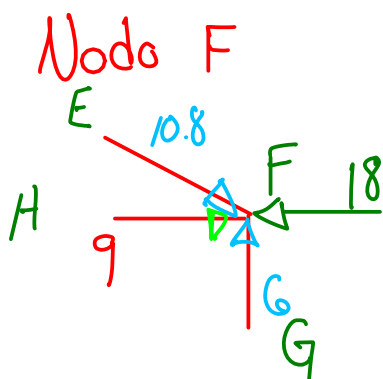


$$\sum F_x = 9 - \left( \frac{3}{\sqrt{13}} \right) F_{GH} = 0$$

$$\therefore F_{GH} = 10.8 T$$

$$\sum F_y = 10.8 \left( \frac{2}{\sqrt{13}} \right) - F_{FG} = 0$$

$$F_{FG} = 6 C$$

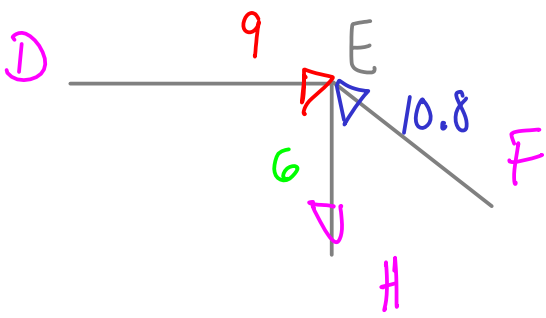


$$\sum F_y = 6 - F_{EF} \left( \frac{2}{\sqrt{13}} \right) = 0$$

$$\therefore F_{EF} = 10.8 C$$

$$\sum F_x = 10.8 \left( \frac{3}{\sqrt{13}} \right) + F_{FH} - 18 = 0 \therefore F_{FH} = 9 C$$

Nodo E

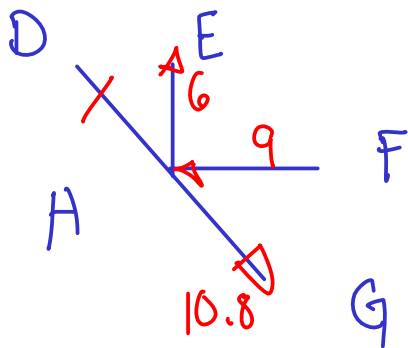


$$\sum F_x = 9 - 10.8 \left( \frac{3}{\sqrt{13}} \right) = 0$$

$$\sum F_y = 10.8 \left( \frac{2}{\sqrt{13}} \right) - F_{EH} = 0$$

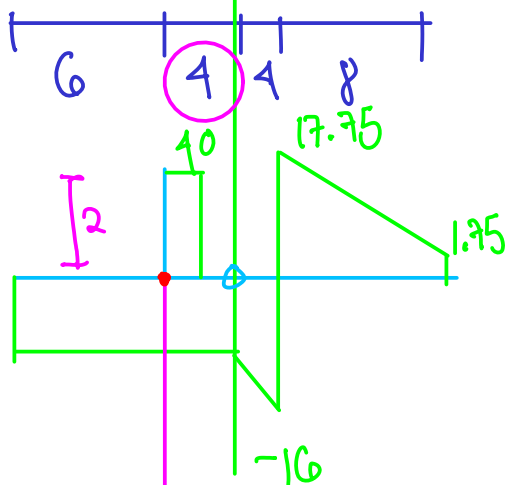
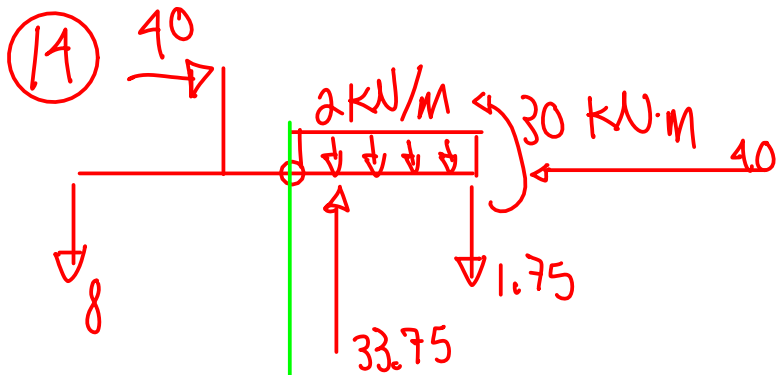
$$F_{EH} = 6$$

Nodo H



$$\sum F_x = -9 + 10.8 \left( \frac{3}{\sqrt{13}} \right) = 0$$

$$\sum F_y = 6 - 10.8 \left( \frac{2}{\sqrt{13}} \right) = 0$$



$$-16 + 33.75 = 17.75$$

$$17.75 - 2(8) = 1.75$$

$$-8(6) = -48 \quad 80 - 48 = 32$$

$$40(2) = 80$$

$$\frac{17.75 + 1.75}{2} (8) = 78$$

$$\frac{8 + 16}{2} (4) = 48$$

