

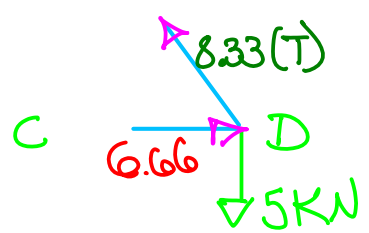
$$\sum M_G = 5(2) + 5(4) + 5(6) - A_x(3) = 0$$

$$A_x = 20 \text{ kN} \rightarrow$$

$$\sum F_x = 20 - G_x = 0 \rightarrow G_x = 20 \text{ kN} \leftarrow$$

$$\sum F_y = -5 - 5 - 5 + G_y = 0 \rightarrow G_y = 15$$

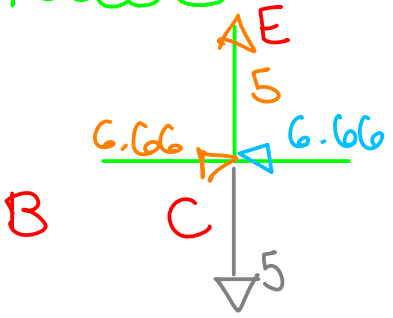
Nodo D



$$\sum F_y = -5 + F_{ED} \left(\frac{3}{5} \right) = 0 \rightarrow F_{ED} = 8.33 \text{ (T)}$$

$$\sum F_x = -8.33 \left(\frac{4}{5} \right) + F_{CD} = 0 \rightarrow F_{CD} = 6.66 \text{ (C)}$$

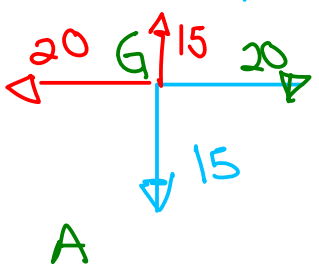
Nodo C



$$\sum F_x = F_{BC} - 6.66 = 0 \rightarrow F_{BC} = 6.66 \text{ (C)}$$

$$\sum F_y = -5 + F_{EC} = 0 \rightarrow F_{EC} = 5 \text{ (T)}$$

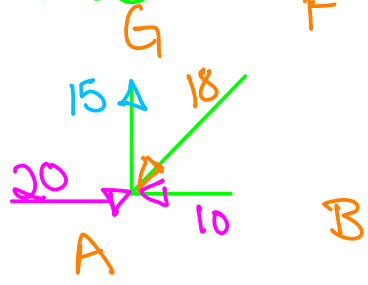
Nodo G



$$\sum F_x = -20 + F_{GF} = 0 \rightarrow F_{GF} = 20 \text{ (T)}$$

$$\sum F_y = 15 - F_{GA} = 0 \rightarrow F_{GA} = 15 \text{ T}$$

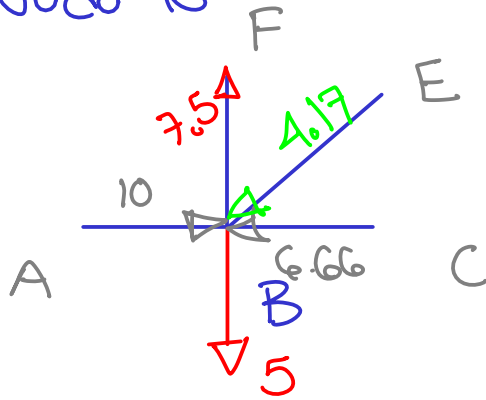
Nodo A



$$\sum F_y = 15 - F_{AF} \left(\frac{3}{\sqrt{13}} \right) = 0 \rightarrow F_{AF} = 18 \text{ (C)}$$

$$\sum F_x = 20 - 18 \left(\frac{2}{\sqrt{13}} \right) - F_{AB} = 0 \rightarrow F_{AB} = 10 \text{ (C)}$$

Nodo B



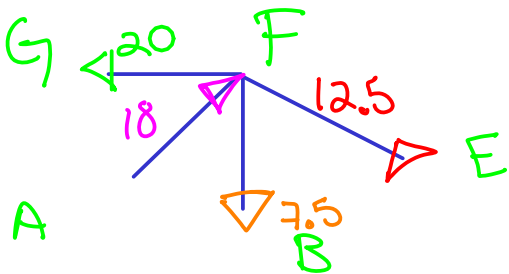
$$\sum F_x = 10 - 6.66 - F_{BE} \left(\frac{4}{5}\right) = 0$$

$$F_{BE} = 4.17 \text{ kN (C.)}$$

$$\sum F_y = -5 - 1.17 \left(\frac{3}{5}\right) + F_{BF} = 0$$

$$F_{BF} = 7.5 \text{ kN (T.)}$$

Nodo F

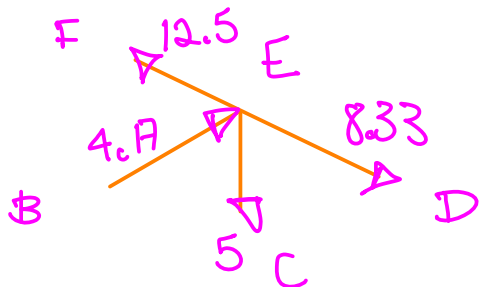


$$\sum F_x = -20 + 18 \left(\frac{2}{\sqrt{13}}\right) + F_{FE} \left(\frac{4}{5}\right) = 0$$

$$F_{FE} = 12.5 \text{ kN (T.)}$$

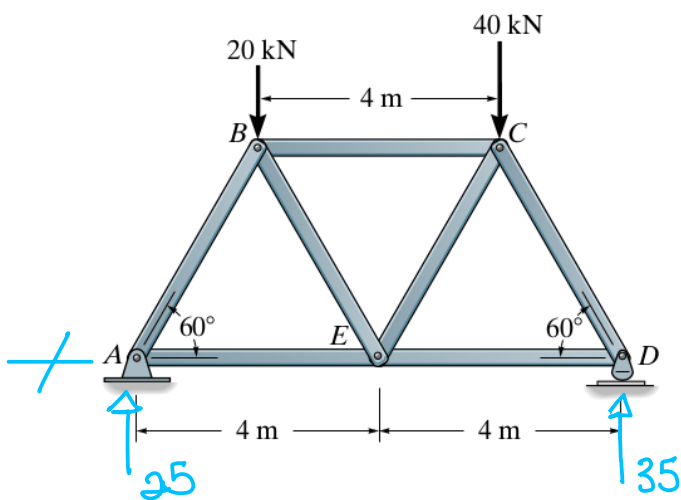
$$\sum F_y = 18 \left(\frac{3}{\sqrt{13}}\right) - 12.5 \left(\frac{3}{5}\right) - 7.5 = 0 \checkmark$$

Nodo E



$$\sum F_x = 4.17 \left(\frac{4}{5}\right) - 12.5 \left(\frac{4}{5}\right) + 8.33 \left(\frac{4}{5}\right) = 0 \checkmark$$

$$\sum F_y = 4.17 \left(\frac{3}{5}\right) + 12.5 \left(\frac{3}{5}\right) - 8.33 \left(\frac{3}{5}\right) - 5 = 0 \checkmark$$



Reacciones

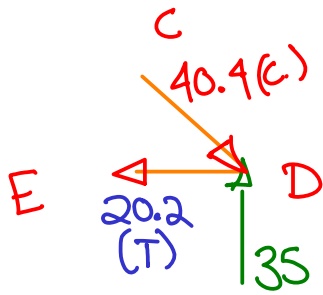
$$\sum M_A = 20(2) + 40(6) - D_y(8) = 0$$

$$D_y = 35 \text{ kN } \uparrow$$

$$\sum F_y = A_y - 20 - 40 + 35 = 0$$

$$A_y = 25 \text{ kN } \uparrow$$

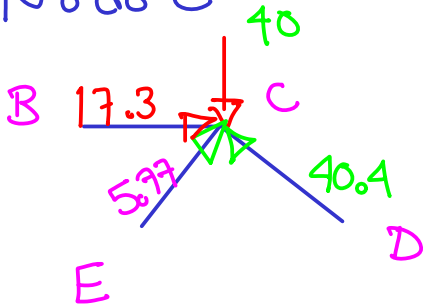
Nodo D



$$\sum F_y = 35 - F_{CD} \sin 60^\circ = 0 \rightarrow F_{CD} = 40.4 \text{ kN (C)}$$

$$\sum F_x = 40.4 \cos 60^\circ - F_{ED} = 0 \rightarrow F_{ED} = 20.2 \text{ kN (T)}$$

Nodo C



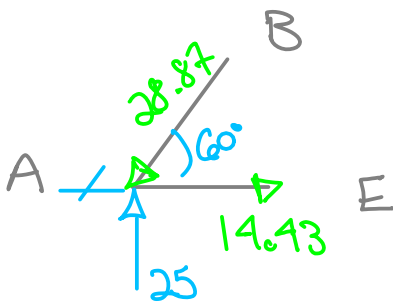
$$\sum F_y = -40 + 40.4 \sin 60^\circ + F_{EC} \sin 60^\circ = 0$$

$$F_{EC} = 5.77 \text{ kN (C)}$$

$$\sum F_x = F_{BC} + 5.77 \cos 60^\circ - 40.4 \cos 60^\circ = 0$$

$$F_{BC} = 17.3 \text{ kN (C)}$$

Nodo A

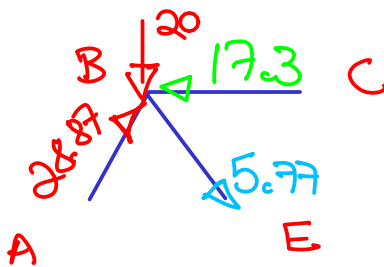


$$\sum F_y = 25 - F_{AB} \sin 60^\circ = 0 \rightarrow F_{AB} = 28.87 \text{ kN (C)}$$

$$\sum F_x = -28.87 \cos 60^\circ + F_{AE} = 0$$

$$F_{AE} = 14.43 \text{ kN (T)}$$

Nodo B



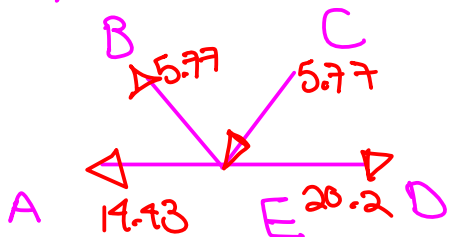
$$\sum F_y = 28.87 \sin 60^\circ - 20 - F_{BE} \sin 60^\circ = 0$$

$$F_{BE} = 5.77 \text{ kN (T)}$$

$$\sum F_x = 28.87 \cos 60^\circ + 5.77 \cos 60^\circ - F_{BC} = 0$$

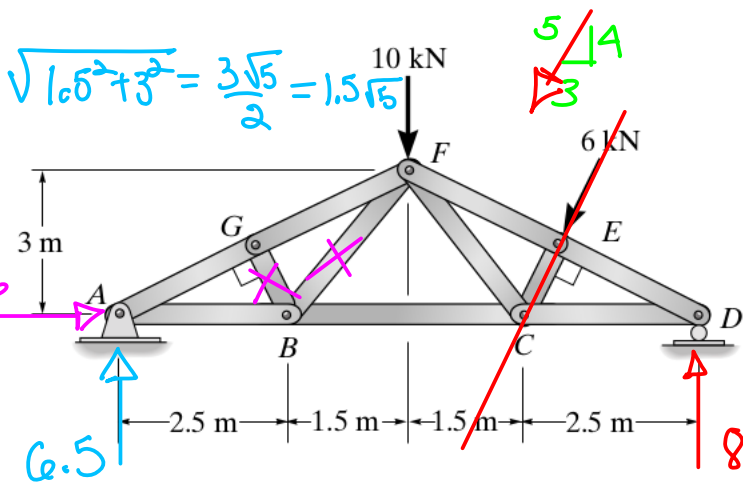
$$F_{BC} = 17.3 \text{ kN (C)}$$

Nodo E



$$\sum F_x = -5.77 \cos 60^\circ - 5.77 \cos 60^\circ - 14.43 + 20.2 = 0 \checkmark$$

$$\sum F_y = 5.77 \sin 60^\circ - 5.77 \sin 60^\circ = 0 \checkmark$$



Reacciones

$$\sum M_A = (10)(4) + 6\left(\frac{4}{5}\right)(5.5) - D_y(8) = 0$$

$$D_y = 8.3 \text{ kN} \uparrow$$

$$D_y = 8.3 \text{ kN} \uparrow$$

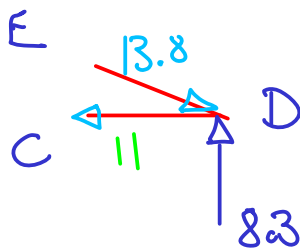
$$\sum F_y = -10 - 6\left(\frac{4}{5}\right) + 8.3 + A_y = 0$$

$$A_y = 6.5 \text{ kN} \uparrow$$

$$\sum F_x = A_x - 6\left(\frac{3}{5}\right) = 0$$

$$A_x = 3.6 \text{ kN}$$

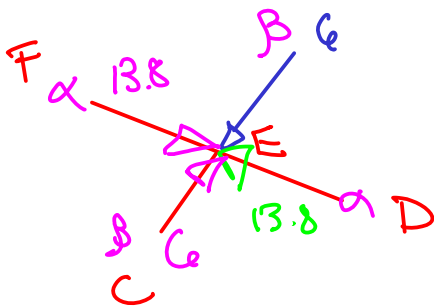
Nodo D



$$\sum F_y = 8.3 - F_{ED}\left(\frac{3}{5}\right) = 0 \rightarrow F_{ED} = 13.8 \text{ kN (C)}$$

$$\sum F_x = 13.8\left(\frac{4}{5}\right) - F_{CD} = 0 \rightarrow F_{CD} = 11 \text{ kN (T)}$$

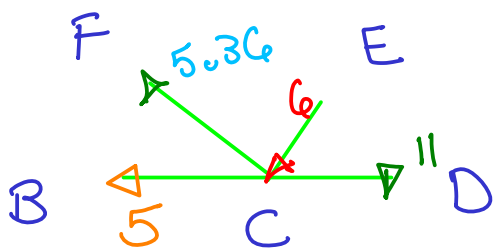
Nodo E



$$\sum F_x = -13.8 + F_{FE} = 0 \rightarrow F_{FE} = 13.8 \text{ kN (C)}$$

$$\sum F_y = -6 + F_{CE} = 0 \rightarrow F_{CE} = 6 \text{ kN (C)}$$

Nodo C

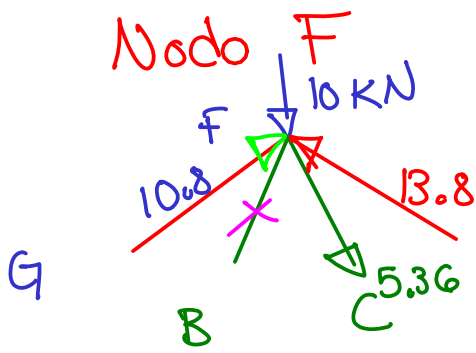


$$\sum F_y = -6\left(\frac{4}{5}\right) + F_{FC}\left(\frac{\frac{3}{1}}{\frac{3\sqrt{5}}{2}}\right) = 0$$

$\frac{3 \cdot 2}{3\sqrt{5}} = \frac{2}{\sqrt{5}}$

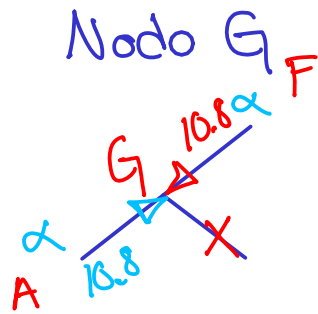
$$F_{FC} = 5.36 \text{ kN (T)}$$

$$\sum F_x = -F_{BC} - 5.36\left(\frac{1.5}{1.5\sqrt{5}}\right) - 6\left(\frac{3}{5}\right) + 11 = 0 \rightarrow F_{BC} = 5 \text{ kN}$$

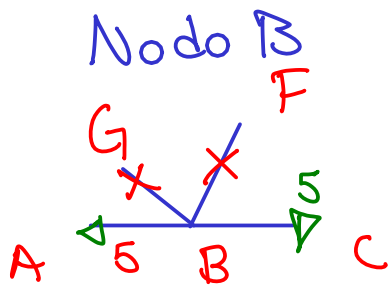


$$\sum F_x = -13.8 \left(\frac{4}{5}\right) + 5.36 \left(\frac{1.5}{1.5\sqrt{5}}\right) + F_{FG} \left(\frac{4}{5}\right) = 0$$

$$F_{FG} = 10.8 \text{ kN (c.)}$$

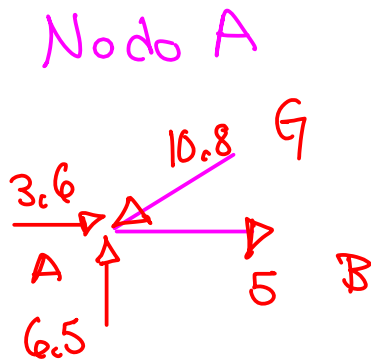


$$\sum F_x = -10.8 + F_{GA} = 0 \rightarrow F_{GA} = 10.8 \text{ kN (c.)}$$



$$\sum F_x = 5 - F_{AB} = 0$$

$$\rightarrow F_{AB} = 5 \text{ kN (T.)}$$



$$\sum F_x = 3.6 - 10.8 \left(\frac{4}{5}\right) + 5 = 0 \checkmark$$

$$\sum F_y = 6.5 - 10.8 \left(\frac{3}{5}\right) = 0 \checkmark$$