

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

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

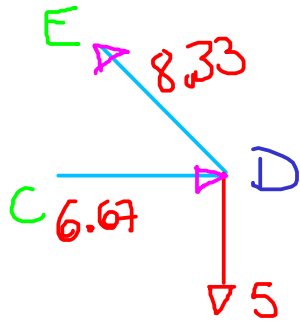
$$\sum F_y = -5 - 5 - 5 + G_y = 0$$

$$G_y = 15 \text{ kN}$$

$$\sum F_x = 20 - G_x = 0$$

$$G_x = 20$$

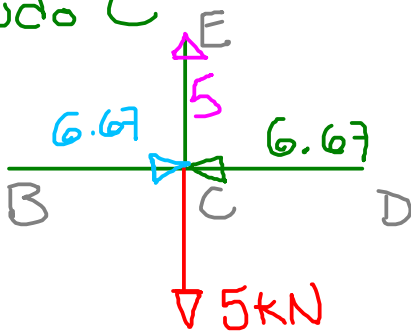
Nodo D



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

$$\sum F_x = -8.33 \left(\frac{4}{5} \right) + F_{CD} = 0 \rightarrow F_{CD} = 6.67 \text{ kN (C)}$$

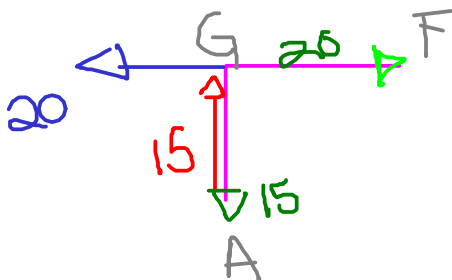
Nodo C



$$\sum F_x = -6.67 + F_{BC} = 0 \rightarrow F_{BC} = 6.67 \text{ kN (C)}$$

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

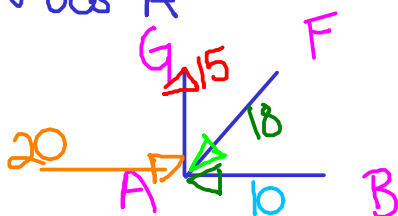
Nodo G



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

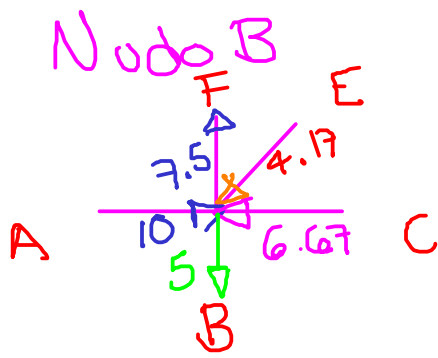
$$\sum F_y = 15 - F_{GA} = 0 \rightarrow F_{GA} = 15 \text{ kN (T)}$$

Nodo A



$$\sum F_y = 15 - F_{AF} \left(\frac{3}{3.6} \right) = 0 \rightarrow F_{AF} = 18 \text{ kN (C)}$$

$$\sum F_x = 20 - 18 \left(\frac{2}{3.6} \right) - F_{AB} = 0 \rightarrow F_{AB} = 10 \text{ kN (C)}$$

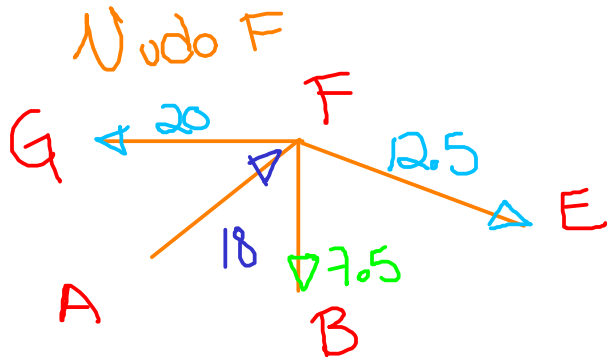


$$\sum F_x = 10 - 6.67 - F_{BE} \left(\frac{4}{5}\right) = 0$$

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

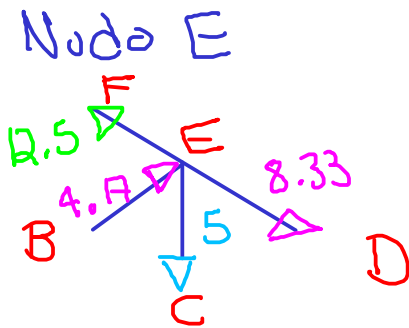
$$\sum F_y = -5 - 4.17 \left(\frac{3}{5}\right) + F_{BF} = 0$$

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



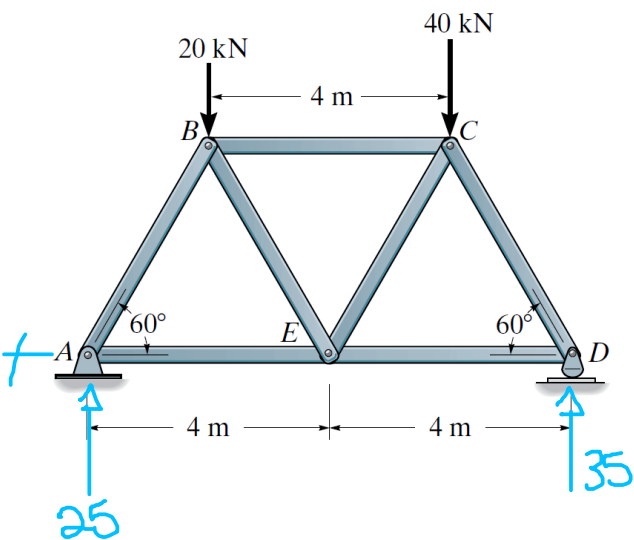
$$\sum F_y = 18 \left(\frac{3}{3.6}\right) - 7.5 - F_{FE} \left(\frac{3}{5}\right) = 0$$

$$F_{FE} = 12.5 \text{ kN}$$



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

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

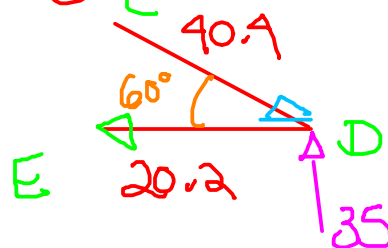


$$\sum M_A = 20(2) + 40(6) - D_y(8) = 0$$

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

$$\sum F_y = -20 - 40 + 35 + A_y = 0 \rightarrow A_y = 25 \text{ kN } \uparrow$$

Nodo D



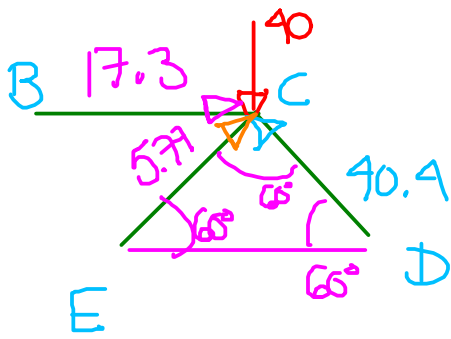
$$\sum F_y = 35 - F_{CD} \text{ sen } 60 = 0$$

$$F_{CD} = 40.4 \text{ kN (C)}$$

$$\sum F_x = 40.4 \text{ cos } 60 - F_{ED} = 0$$

$$F_{ED} = 20.2 \text{ kN (T)}$$

Nodo C



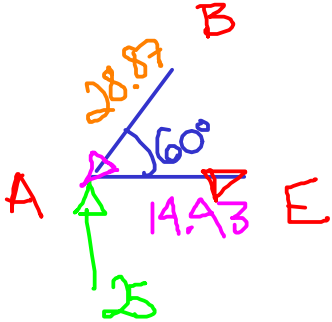
$$\sum F_y = -40 + 40.4 \sin 60^\circ + F_{EC} \sin 60^\circ = 0$$

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

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

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

Nodo A



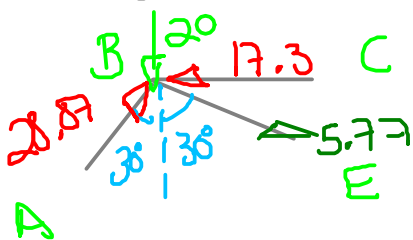
$$\sum F_y = 25 - F_{AB} \sin 60^\circ = 0$$

$$\hookrightarrow F_{AB} = 28.87 \text{ kN (C)}$$

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

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

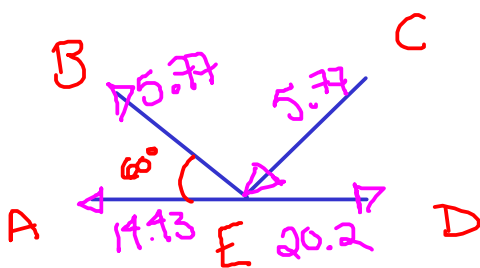
Nodo B



$$\sum F_x = 28.87 \sin 30^\circ - 17.3 + F_{BE} \sin 30^\circ = 0$$

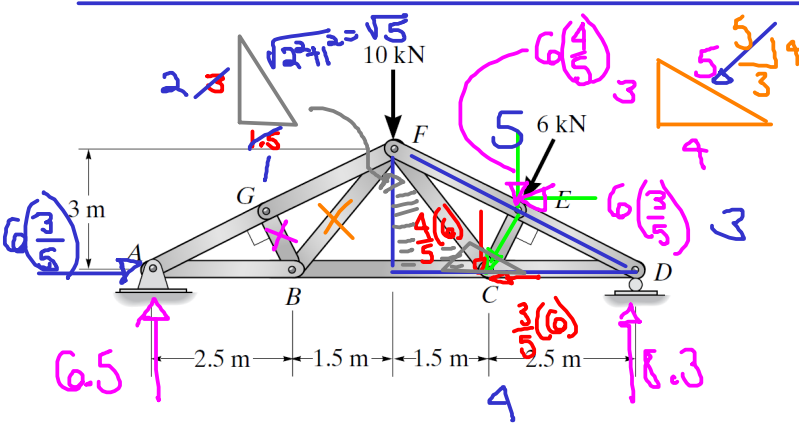
$$F_{BE} = 5.77 \text{ kN (T)}$$

Nodo E



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

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



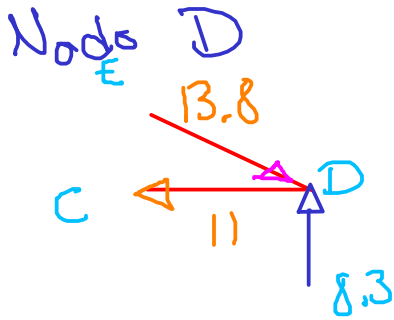
$$\sum M_A = 10(4) + 6\left(\frac{4}{5}\right)(6.4) - D_y(8) - 6\left(\frac{3}{5}\right)(1.2) = 0 \rightarrow D_y = 8.3 \text{ kN}$$

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

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

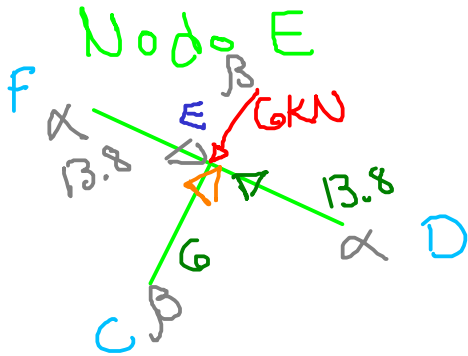
$$\sum F_y = -10 - 6\left(\frac{4}{5}\right) + 8.3 + A_y = 0$$

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



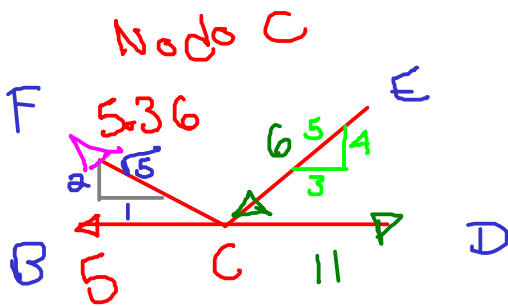
$$\sum F_y = 0 = 8.3 - F_{ED} \left(\frac{3}{5}\right) \rightarrow F_{ED} = 13.8 \text{ kN (C.)}$$

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



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

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

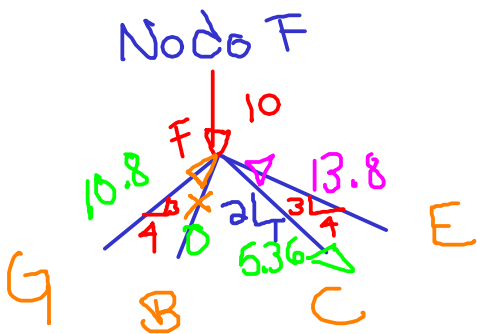


$$\sum F_y = -6\left(\frac{4}{5}\right) + F_{FC} \left(\frac{2}{\sqrt{5}}\right) = 0$$

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

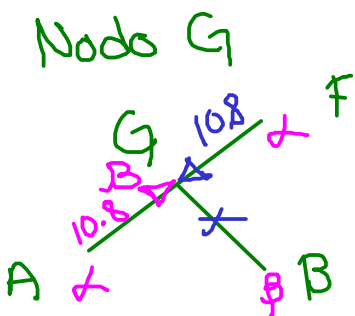
$$\sum F_x = 11 - 6\left(\frac{3}{5}\right) - 5.36\left(\frac{1}{\sqrt{5}}\right) - F_{BC} = 0$$

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



$$\sum F_y = -10 + 13.8\left(\frac{3}{5}\right) - 5.36\left(\frac{2}{\sqrt{5}}\right) + F_{FG}\left(\frac{3}{5}\right) = 0$$

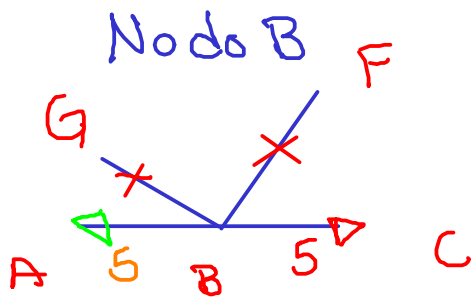
$$F_{FG} = 10.8 \text{ kN (C.)}$$



$$\sum F_B = 0$$

$$\sum F_x = -10.8 + F_{AG} = 0$$

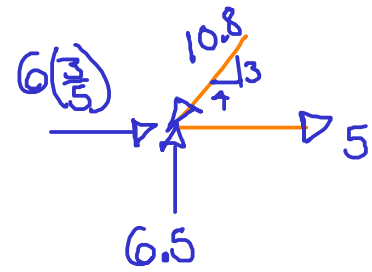
$$F_{AG} = 10.8 \text{ kN (C.)}$$



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

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

Node A



$$\sum F_x = 6\left(\frac{3}{5}\right) + 5 - 10.8\left(\frac{4}{5}\right) = 0 \checkmark$$

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