

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

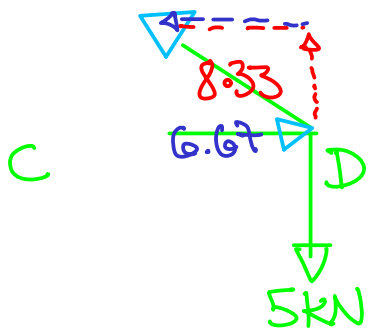
$$A_x = 20 \text{ kN} \rightarrow$$

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

$$G_x = 20 \leftarrow$$

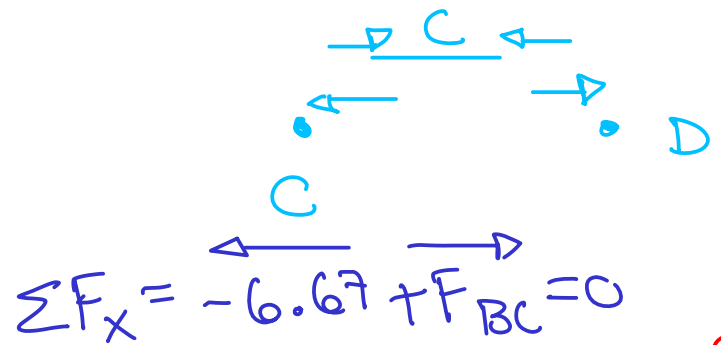
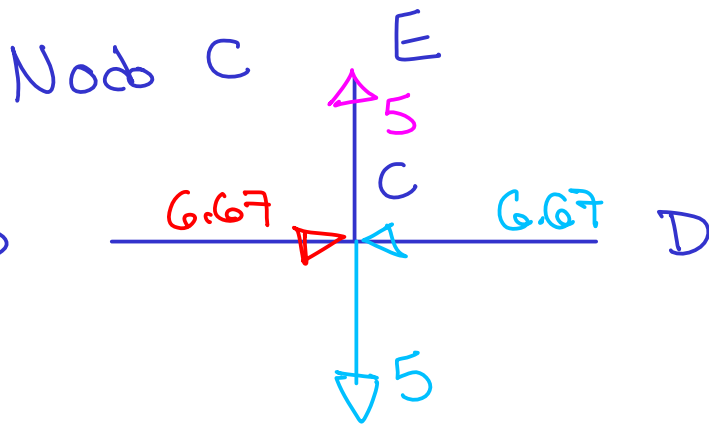
$$\sum F_y = G_y - 5 - 5 - 5 = 0$$

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



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

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

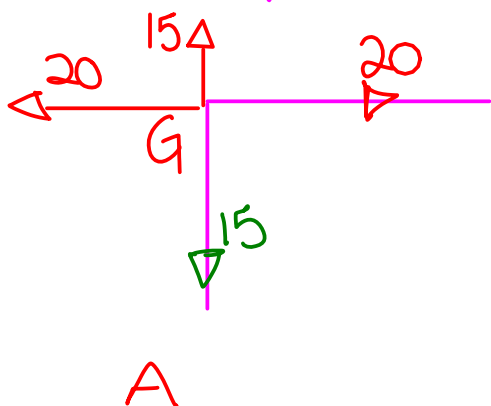


$$\sum F_x = -6.67 + F_{BC} = 0$$

$$F_{BC} = 6.67 \text{ kN} \rightarrow \text{C}$$

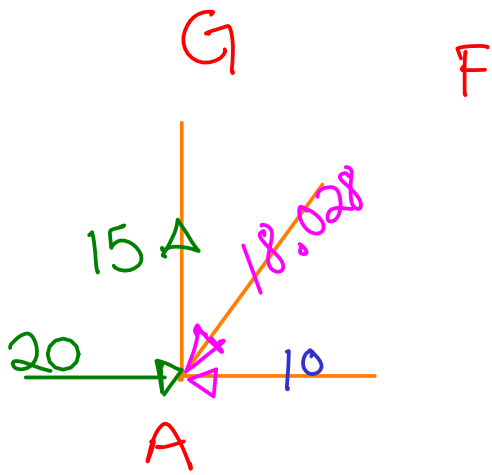
$$\sum F_y = F_{EC} - 5 \text{ kN} = 0 \quad F_{EC} = 5 \text{ kN} \uparrow \text{ T}$$

Nodo G



$$\sum F_x = -20 + F_{FG} = 0 \quad \therefore F_{FG} = 20 \text{ T} \rightarrow$$

$$\sum F_y = 15 - F_{GA} = 0 \quad \therefore F_{GA} = 15 \text{ T} \downarrow$$



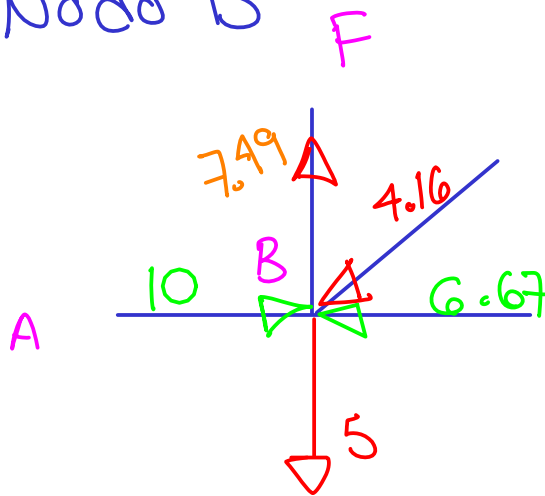
$$\sum F_y = 15 - F_{AF} \left( \frac{3}{\sqrt{2^2+3^2}} \right) = 0$$

$$F_{AF} = 18.028 (C)$$

$$\sum F_x = 20 - 18.028 \left( \frac{2}{\sqrt{13}} \right) - F_{AB} = 0$$

$$F_{AB} = 10 \text{ kN (C)}$$

Nodo B



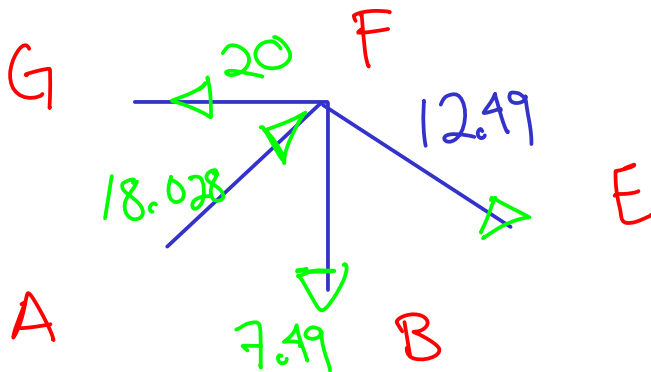
$$\sum F_x = 10 - 6.67 - F_{BE} \left( \frac{4}{5} \right) = 0$$

$$F_{BE} = 4.16 (C)$$

$$\sum F_y = -5 - 4.16 \left( \frac{3}{5} \right) + F_{BF} = 0$$

$$F_{BF} = 7.49 (T)$$

Nodo F



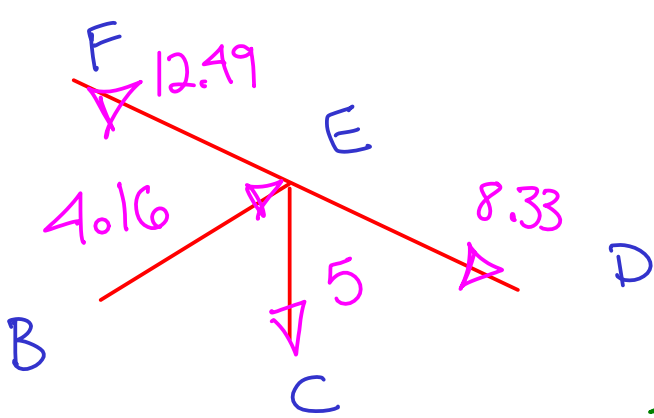
$$\sum F_x = -20 + 18.028 \left( \frac{2}{\sqrt{13}} \right)$$

$$+ F_{FE} \left( \frac{4}{5} \right) = 0$$

$$F_{FE} = 12.19 (T)$$

$$\sum F_y = 18.028 \left( \frac{3}{\sqrt{13}} \right) - 7.49 - F_{FE} \left( \frac{3}{5} \right) = 0$$

$$F_{FE} = 12.19 (T) \quad \checkmark$$

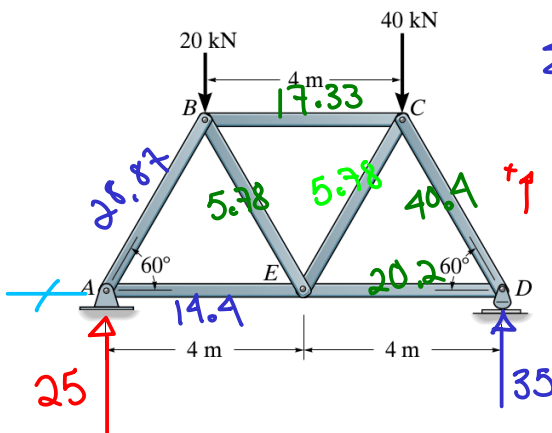


$$\sum F_x = 4.16 \left(\frac{4}{5}\right) + 8.33 \left(\frac{4}{5}\right)$$

$$- 12.49 \left(\frac{4}{5}\right) = 0 \quad \checkmark$$

$$\sum F_y = 4.16 \left(\frac{3}{5}\right) - 8.33 \left(\frac{3}{5}\right) + 12.49 \left(\frac{3}{5}\right)$$

$$- 5 = 0 \quad \checkmark$$



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

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

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

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

$$\sum F_x = A_x = 0$$

Nodo D

$$\sum F_y = 35 - F_{CD} \sin 60^\circ = 0$$

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

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

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

Nodo A

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

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

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

$$F_{AE} = 14.44 \text{ (T)}$$

Nodo B

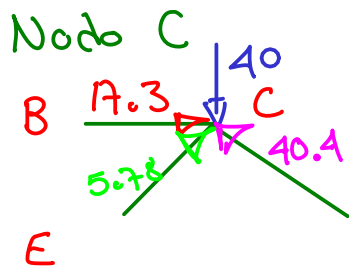
$$\sum F_y = 28.87 \sin 60^\circ - 20$$

$$- F_{BE} \sin 60^\circ = 0$$

$$F_{BE} = 5.78 \text{ kN (T)}$$

$$\sum F_x = 28.87 \cos 60^\circ + 5.78 \cos 60^\circ$$

$$- F_{BC} = 0 \quad F_{BC} = 17.33 \text{ kN (C)}$$

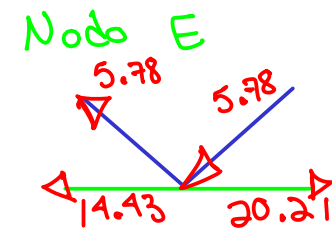


$$\sum F_x = 17.3 - 40.4 \cos 60$$

$$+ F_{EC} \cos 60^\circ = 0$$

$$F_{EC} = 5.78 \text{ kN (c)}$$

D



$$\sum F_y = 5.78 \operatorname{sen} 60 - 5.78 \operatorname{sen} 60 = 0 \checkmark$$

$$\sum F_x = -14.43 + 20.21 - 5.78 \cos 60$$

$$- 5.78 \cos 60 = 0 \checkmark$$