


① Analizando el nodo C:



$$+\uparrow \sum F_y = 0; \quad F_{BC} \sin 30^\circ - 1.5 = 0$$

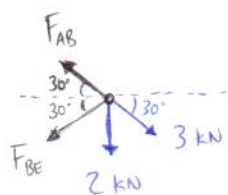
$$F_{BC} = \frac{1.5}{\sin 30^\circ} = 3 \text{ kN}$$

$$+\rightarrow \sum F_x = 0; \quad -F_{CD} - F_{BC} \cos 30^\circ = 0$$

$$F_{CD} = -F_{BC} \cos 30^\circ = -2.598 \text{ kN}$$

$$F_{BC} = 3 \text{ kN (T)} \quad | \quad F_{CD} = 2.598 \text{ kN (C)}$$

• Analizando el nodo B:



$$+\rightarrow \sum F_x = 0; \quad -F_{AB} \cos 30^\circ - F_{BE} \cos 30^\circ + 3 \cos 30^\circ = 0$$

$$-0.866 F_{AB} - 0.866 F_{BE} + 2.598 = 0 \quad \dots (i)$$

$$+\uparrow \sum F_y = 0; \quad F_{AB} \sin 30^\circ - F_{BE} \sin 30^\circ - 2 - 3 \sin 30^\circ = 0$$

$$0.5 F_{AB} - 0.5 F_{BE} - 3.5 = 0 \quad \dots (ii)$$

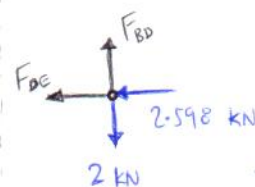
• Despejando  $F_{AB}$  de (i) y (ii) e igualando:

$$\frac{-0.866 F_{BE} + 2.598}{0.866} = \frac{0.5 F_{BE} + 3.5}{0.5} \rightarrow -F_{BE} + 3 = F_{BE} + 7 \rightarrow F_{BE} = -2 \text{ kN}$$

$$\therefore F_{AB} = -F_{BE} + 3 = -(-2) + 3 = 5 \text{ kN}$$

$$\therefore F_{BE} = 2 \text{ kN (C)} \quad | \quad F_{AB} = 5 \text{ kN (T)}$$

• Analizando el nodo D:



$$+\rightarrow \sum F_x = 0; \quad -F_{DE} - 2.598 = 0$$

$$\therefore F_{DE} = -2.598 \text{ kN}$$

$$+\uparrow \sum F_y = 0; \quad F_{BD} - 2 = 0$$

$$\therefore F_{BD} = 2 \text{ kN}$$

$$F_{DE} = 2.598 \text{ kN (C)}$$

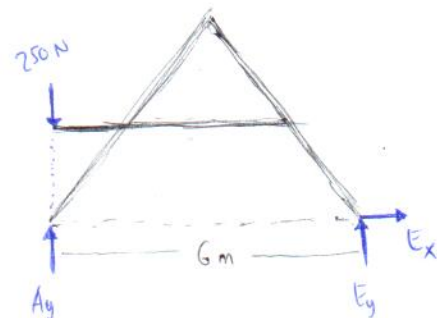
$$F_{BD} = 2 \text{ kN (T)}$$

② Analizando el bastidor completo:

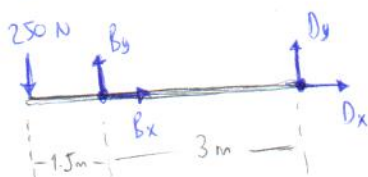
$$+\uparrow \sum M_E = 0; \quad -A_y(6) + 250(6) = 0 \rightarrow A_y = 250 \text{ N}$$

$$+\rightarrow \sum F_x = 0; \quad E_x = 0$$

$$+\uparrow \sum F_y = 0; \quad A_y + 250 + E_y = 0 \rightarrow E_y = 0$$



• Analizando BD:



• Analizando CDE:

$$+\uparrow \sum M_C = 0; \quad 125(1.5) - D_x(2) = 0$$

$$\therefore D_x = \frac{125(1.5)}{2} = 93.75 \text{ N}$$

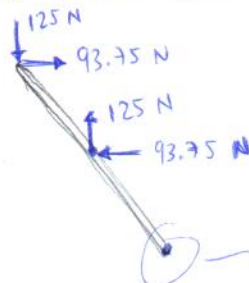
$$+\uparrow \sum F_y = 0; \quad C_y + 125 = 0$$

$$\therefore C_y = -125 \text{ N}$$

$$+\rightarrow \sum F_x = 0; \quad C_x - D_x = 0 \rightarrow C_x = D_x$$

$$\therefore C_x = 93.75 \text{ N}$$

• Fuerzas actuando sobre CDE:



$$C_x = 93.75 \text{ N} \rightarrow$$

$$C_y = 125 \text{ N} \downarrow$$

$$D_x = 93.75 \text{ N} \leftarrow$$

$$D_y = 125 \text{ N} \uparrow$$

$$E_x = 0$$

$$E_y = 0$$

$$E_x = 0$$

$$E_y = 0$$

$$+\uparrow \sum M_B = 0; \quad 250(1.5) + D_y(3) = 0$$

$$D_y = \frac{-250(1.5)}{3} = -125 \text{ N}$$