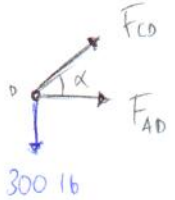
Q03 - MCR - 3B & 3C - 2302

- Analizando el nodo D: $\alpha = \tan^{-1}\left(\frac{3}{4}\right) = 36.87°$



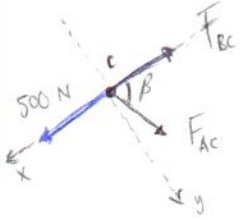
$+\uparrow \sum F_y = 0$; $F_{CD}\,\text{sen}\,\alpha - 300 = 0$

$\hookrightarrow F_{CD} = \frac{300}{\text{sen}\,\alpha} = 500$ lb (T)

$\pm \sum F_x = 0$; $F_{AD} + F_{CD}\cos\alpha = 0 \Rightarrow F_{AD} = -F_{CD}\cos\alpha = -400$ N

$\therefore$ $F_{AD} = 400$ lb (C)

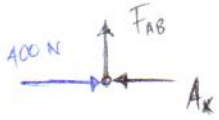
- Analizando el nodo C:



$+\downarrow \sum F_y = 0$; $F_{AC}\,\text{sen}\,\beta = 0 \Rightarrow \therefore F_{AC} = 0$

$\pm \sum F_x = 0$; $500 - F_{BC} = 0 \Rightarrow F_{BC} = 500$ lb (T)

- Analizando el nodo A:



$+\uparrow \sum F_y = 0$; $F_{AB} = 0$

Q03 - MCR - 3A - 2302

$\theta = \tan^{-1}\left(\frac{2}{2}\right) = 45°$

- Analizando el nodo A:

$+\uparrow \sum F_y = 0$; $-8 - F_{AD}\,\text{sen}\,\theta = 0$

$F_{AD} = \frac{-8}{\text{sen}\,\theta} = -11.31$ kN

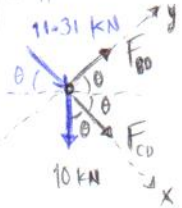
$\therefore$ $F_{AD} = 11.31$ kN (C)

$\pm \sum F_x = 0$; $F_{AB} + F_{AB}\cos\theta = 0$

$\hookrightarrow F_{AB} = -F_{AB}\cos\theta = -(-11.31)\cos 45°$

$\therefore$ $F_{AB} = 8$ kN (T)

- Analizando el nodo D:



$\pm \sum F_x = 0$; $11.31 + 10\cos\theta + F_{CD} = 0$

$F_{CD} = -11.31 - 10\cos\theta = -18.38$ kN

$\therefore$ $F_{CD} = 18.38$ kN (C)

$+\uparrow \sum F_y = 0$; $F_{BD} - 10\,\text{sen}\,\theta = 0 \rightarrow F_{BD} = 10\,\text{sen}\,\theta$

$\therefore$ $F_{BD} = 7.071$ kN (T)

- Analizando el nodo C:

$+\uparrow \sum F_y = 0$; $-18.38\,\text{sen}\,\theta + F_{BC} = 0$

$\therefore$ $F_{BC} = 13$ kN (T)