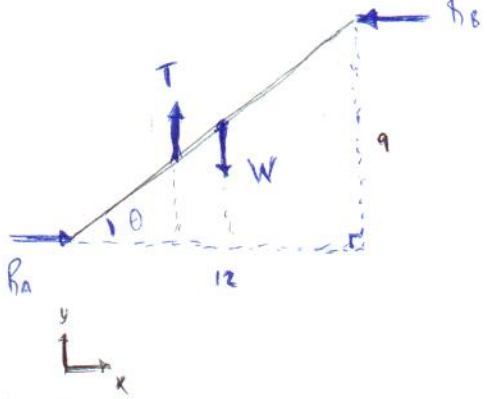
ESPR - MCK - 2382

Ecs. de Equilíbrio

$\theta = 36.87°$ $\quad +\uparrow \sum F_y = 0 \rightarrow T - W = 0 \therefore T = W = 1471.5\ N$

① (3/6)

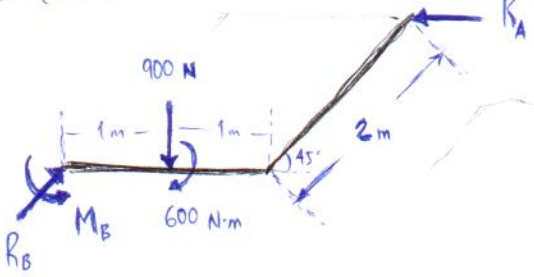


$+\circlearrowleft \sum M_A = 0 \rightarrow T(4) - W(6) + R_B(9) = 0$

$R_B = \dfrac{W(6) - T(4)}{9} = 327\ N$

$\pm \sum F_x = 0 \rightarrow R_A - R_B = 0 \rightarrow R_A = R_B = 327\ N$

② (5-42)



$+\uparrow \sum F_y = 0 \rightarrow 0.7071\, R_B - 900 = 0 \rightarrow R_B = \dfrac{900}{0.7071}$

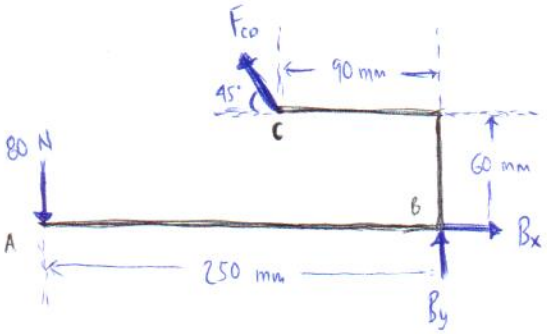
$\therefore R_B = 1\,272.8\ N$

$\pm \sum F_x = 0 \rightarrow 0.7071\, R_B - R_A = 0 \rightarrow R_A = 0.7071\, R_B$

$\therefore R_A = 900\ N$

$+\circlearrowleft \sum M_B = 0 \rightarrow -900(1) - 600 + R_A(\sqrt{2}) + M_B = 0 \rightarrow M_B = 227.2\ N$

③



- Ecuaciones de equilibrio:

$+\circlearrowleft \sum M_B = 0 \rightarrow 80(250) + 0.7071\, F_{CD}(60) - 0.7071\, F_{CD}(90) = 0$

$\therefore F_{CD} = 942.8\ N$

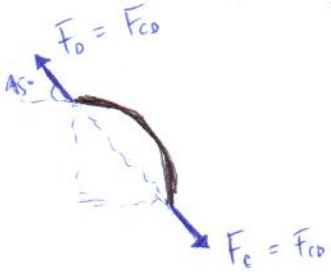
$\pm \sum F_x = 0 \rightarrow B_x - F_{CD}(0.7071) = 0$

$\therefore B_x = 666.7\ N$

$+\uparrow \sum F_y = 0 \rightarrow B_y - 80 + 0.7071\, F_{CD} = 0$

$B_y = -586.7\ N$

$\therefore B_y = 586.7\ N \downarrow$



$\therefore \vec{R}_D = \vec{F}_D = \vec{F}_{CD} = 942.8\ N \measuredangle 45°$