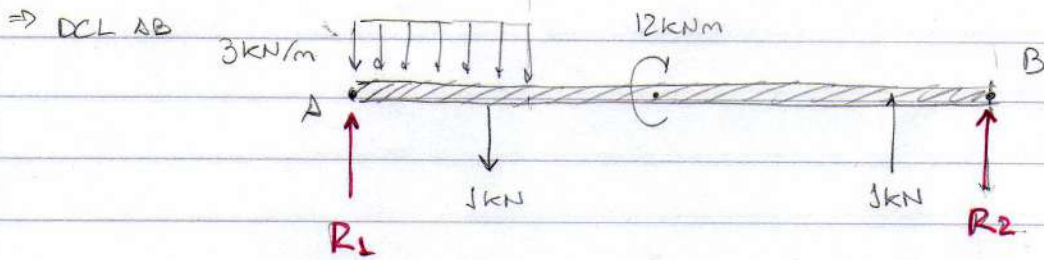
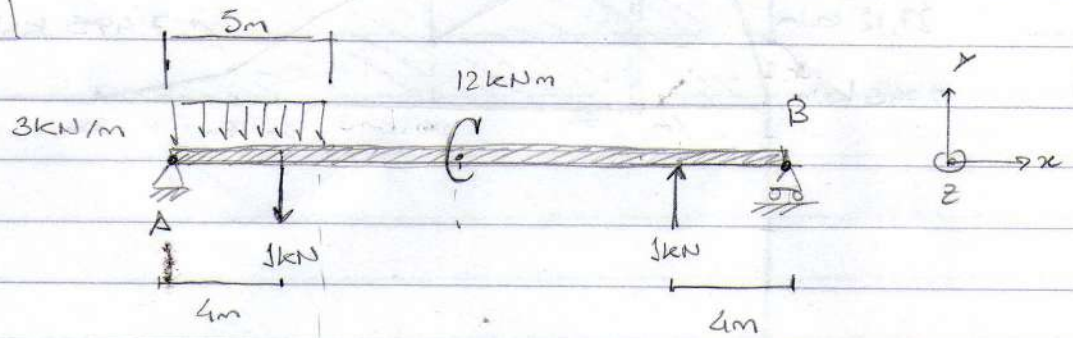


2º P 2025

Problema 1



$\Rightarrow \sum F_y = 0 \Leftrightarrow R_1 + 1 \text{ kN} + R_2 = 1 \text{ kN} + 3 \text{ kN} \times 5 \text{ m}$

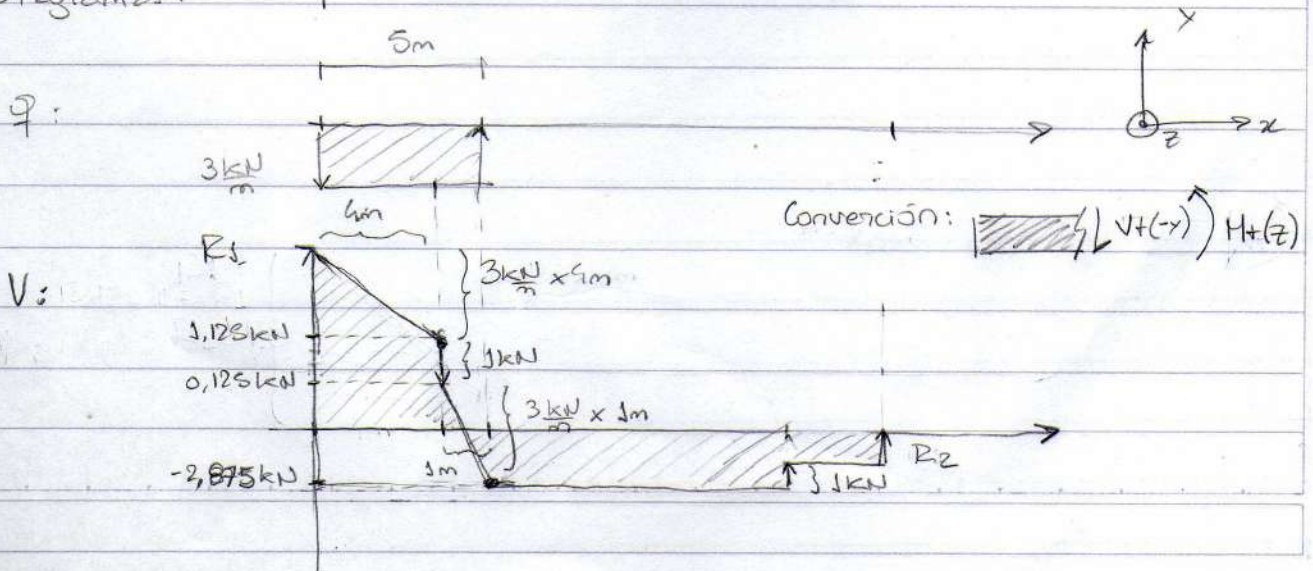
$\Leftrightarrow R_1 + R_2 = 15 \text{ kN} \quad (1)$

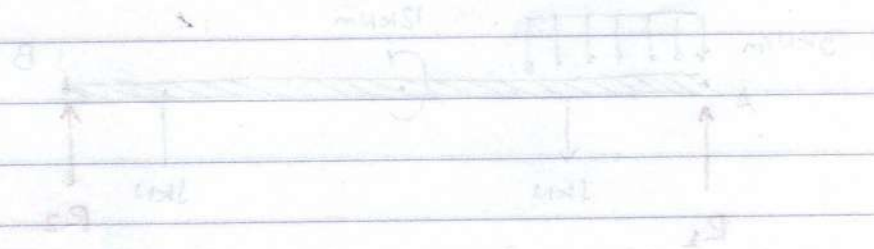
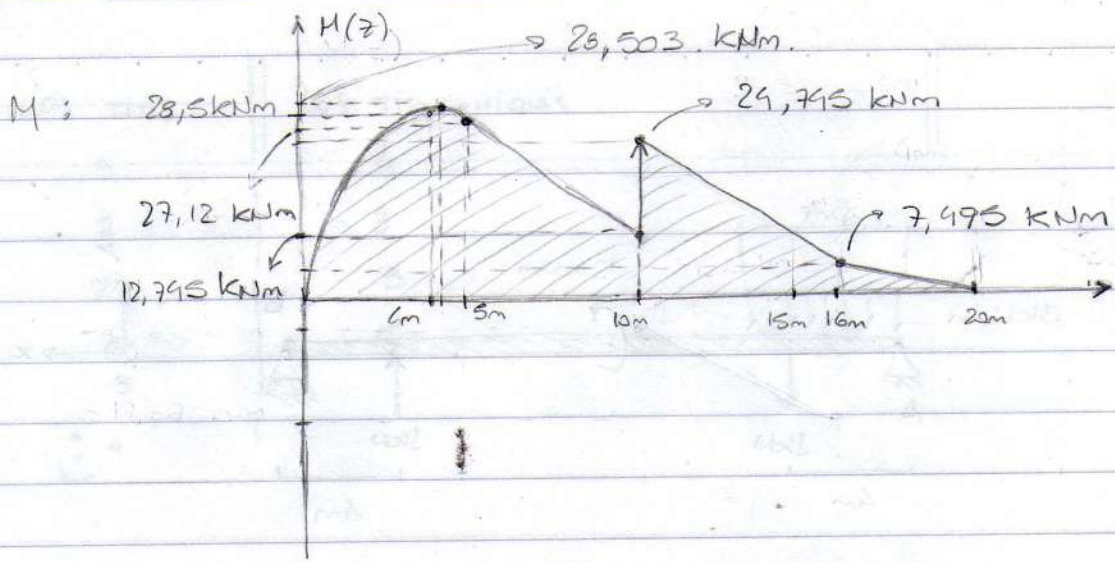
$\Rightarrow \sum M_A = 0 \Leftrightarrow 3 \text{ kN} \times 5 \text{ m} \times 2,5 \text{ m} + 1 \text{ kN} \times 4 \text{ m} + 12 \text{ kNm} = 1 \text{ kN} \times 16 \text{ m} + R_2 \times 20 \text{ m}$

$\Leftrightarrow 37,5 \text{ kNm} + 4 \text{ kNm} + 12 \text{ kNm} = 16 \text{ kNm} + 20 \text{ m} \times R_2$
 $37,5 \text{ kNm} = 20 \text{ m} \times R_2 \Rightarrow R_2 = 1,875 \text{ kN} \quad (2)$

$\Rightarrow (1) \times (2) \Rightarrow R_1 = 13,125 \text{ kN}$

Diagramas:





$$\sum F_z = 0 \Rightarrow P_1 + P_2 - 12 \times 5 = 0 \Rightarrow P_1 + P_2 = 60 \text{ kN} \quad (1)$$

$$\sum M = 0 \Rightarrow P_2 \cdot 20 - 12 \times 5 \times 17.5 = 0 \Rightarrow P_2 = 26.25 \text{ kN} \quad (2)$$

$$\Rightarrow P_1 = 60 - 26.25 = 33.75 \text{ kN} \quad (3)$$

$$\Rightarrow \text{Total load} = 12 \times 5 = 60 \text{ kN} \quad (4)$$

$$\Rightarrow \text{Reaction at left} = P_1 = 33.75 \text{ kN} \quad (5)$$

$$\Rightarrow \text{Reaction at right} = P_2 = 26.25 \text{ kN} \quad (6)$$