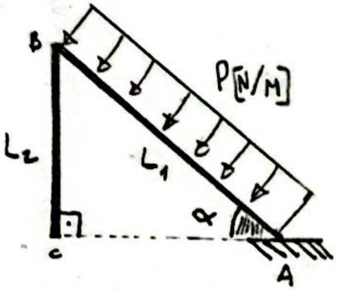
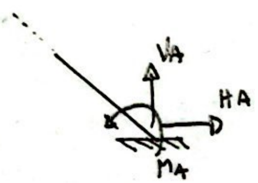
Feitos os devidos considerações vamos simplificar a estrutura para o seguinte esquema:

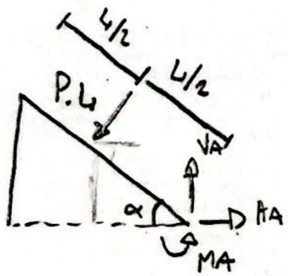


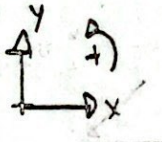
Passo 1: O vínculo existente na figura é um engastamento, logo teremos 3 reações vinculares. Nosso sistema é isostático!



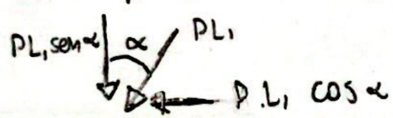
Passo 2: Vamos calcular os valores dessas reações:

DCL





Vamos decompor o carregamento mecânicomente equivalente:



$$\begin{cases} \Sigma F_x = 0 \rightarrow HA - P.L_1 \cos\alpha = 0 \quad (1) \\ \Sigma F_y = 0 \rightarrow V_A - P.L_1 \operatorname{sen}\alpha = 0 \quad (2) \\ \Sigma M_A = 0 \end{cases}$$

$h = \frac{L_1}{2} \operatorname{sen}\alpha$

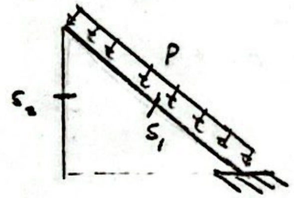
$b = \frac{L_1}{2} \cos\alpha$

$\hookrightarrow PL_1 \cos\alpha . \frac{L_1}{2} \operatorname{sen}\alpha - PL_1 \operatorname{sen}\alpha . \frac{L_1}{2} \cos\alpha + M_A = 0 \quad (3)$

De (1), (2) e (3): $H_A = PL_1 \cos\alpha$ $\quad M_A = 0$

$V_A = PL_1 \operatorname{sen}\alpha$

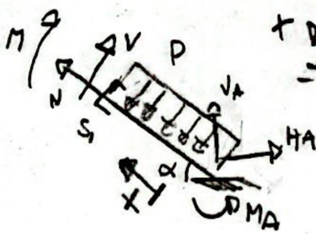
Passo 3: Para a estrutura mostrada, precisaremos de 2 cortes:

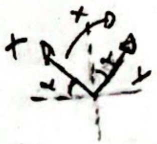


- Corte S_1
- Corte S_2

Passo 4: Vamos analisar cada corte selecionado

- Corte S_1





$x \in [0, L]$

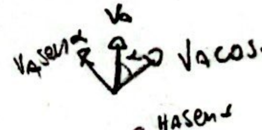
Definidos os esforços:

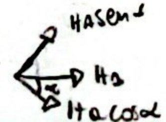
$\Sigma F_x = 0$

$\Sigma F_y = 0$

$\Sigma M_{s_1} = 0$

Decompondo V_A e H_A





$x \rightarrow N + V_A \operatorname{sen}\alpha - H_A \cos\alpha = 0 \quad (4)$

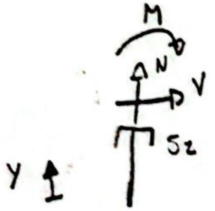
$y \rightarrow V - Px + V_A \cos\alpha + H_A \operatorname{sen}\alpha = 0 \quad (5)$

$\Sigma M_i \rightarrow M + P.x \frac{x}{2} - V_A \cos\alpha . x - H_A \operatorname{sen}\alpha \, x = 0 \quad (6)$

De (4), (5), (6):

$$\boxed{\begin{aligned} N &= 0 \\ V &= P.x - PL_1 . \operatorname{sen}(2\alpha) \\ M &= PL_1 \operatorname{sen}(2\alpha)\, x - \frac{Px^2}{2} \end{aligned}}$$

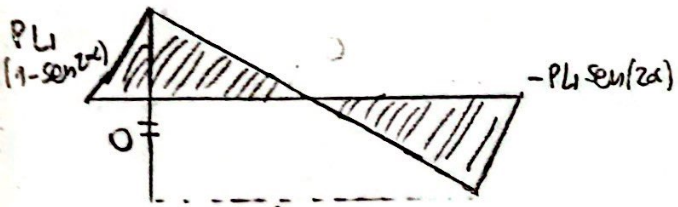
• Corte S_2



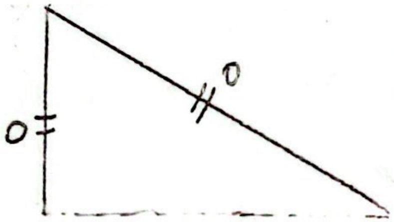
$\boxed{M = N = V = 0}$

$y \in [0, L_2]$

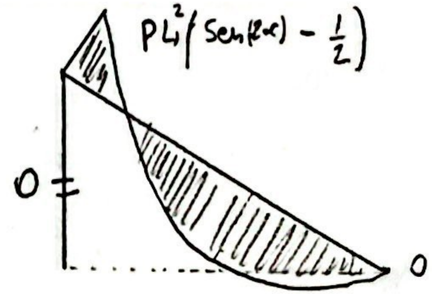
Passo 5: Vamos traçar os diagramas para cada esforço solicitante na estrutura.



V



N



M