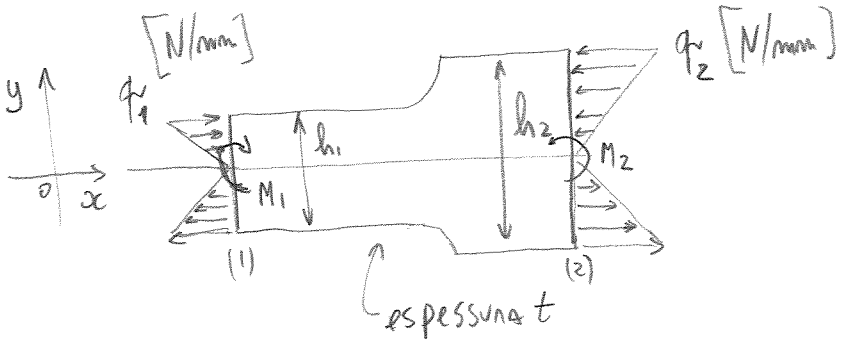
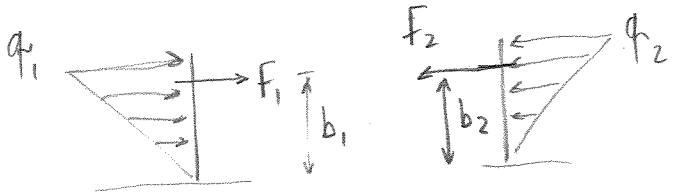
Equilíbrio de Carga distribuída triangular (momento fletor)





ABAQUS:

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ANALYTICAL FIELD: Y

MAGNITUDE: P_1 ou P_2

No caso da superfície (1) e (2) estarem sujeitas a uma pressão P_1 e P_2 temos,

$$q_1 = P_1 \frac{h_1}{2} \quad e \quad q_2 = P_2 \frac{h_2}{2}$$

Calculo do momento M_1

$$M_1 = 2 F_1 \times b_1$$

$$F_1 = \frac{q_1 h_1/2}{2} = \frac{q_1 h_1}{4}$$

$$b_1 = \frac{2}{3}\frac{h_1}{2} = \frac{h_1}{3}$$

$$\Rightarrow M_1 = \frac{q_1 h_1^2}{6} \Rightarrow$$

$$\Rightarrow M_1 = \frac{P_1 h_1^3}{12}$$

Equilíbrio de momentos ($\Sigma M = 0$)

temos $M_1 = M_2 \Rightarrow \frac{P_1 h_1^3}{12} = \frac{P_2 h_2^3}{12} \Rightarrow$

$$\boxed{P_1 = \frac{h_2^3}{h_1^3} P_2}$$