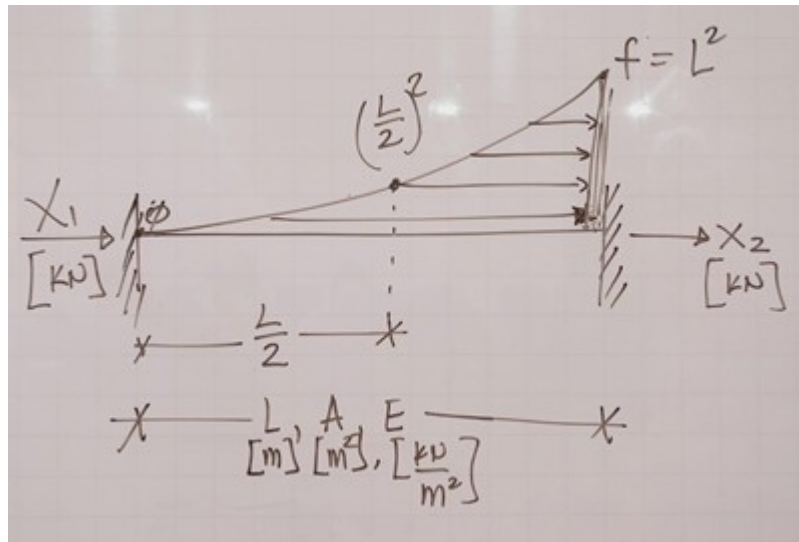




#1: [CaseMode := Sensitive, InputMode := Word]

#2: $[X_1 :=, X_2 :=, L :=, A :=, E :=, f := x^2, F_{total} :=, \sigma(x) :=, \varepsilon(x) :=]$

Carga axial total con una carga parabólica correspondiente a la figura:

#3: $F_{total} := \int_0^L x^2 dx$

#4: $F_{total} := \frac{L^3}{3}$

Equilibrio de la estructura:

#5: $X_1 + X_2 + F_{total} = 0$

#6: $\frac{L^3}{3} + X_1 + X_2 = 0$

DCL de parte de la estructura, también en equilibrio:



#7: $X_1 + \int_0^L f dx + \sigma(x) \cdot A = 0$

$$\#8: \quad X1 + \frac{x^3}{3} + \sigma(x) \cdot A = 0$$

$$\#9: \quad X1 + \frac{x^3}{3} + (E \cdot \varepsilon(x)) \cdot A = 0$$

$$\#10: \quad X1 + \frac{x^3}{3} + \left(E \cdot \frac{\partial(u)}{\partial(x)} \right) \cdot A = 0$$

$$\#11: \quad \frac{\partial(u)}{\partial(x)} = - \frac{X1 + \frac{x^3}{3}}{A \cdot E}$$

$$\#12: \quad \partial(u) = - \frac{X1 + \frac{x^3}{3}}{A \cdot E} \cdot \partial(x)$$

$$\#13: \quad \int_{U \downarrow 0}^{U \downarrow L} 1 \, du = - \frac{1}{A \cdot E} \cdot \int_0^L \left(X1 + \frac{x^3}{3} \right) dx$$

$$\#14: \quad U_L - U_0 = - \frac{1}{A \cdot E} \cdot \int_0^L \left(X1 + \frac{x^3}{3} \right) dx$$

$$\#15: \quad 0 - 0 = - \frac{1}{A \cdot E} \cdot \int_0^L \left(X1 + \frac{x^3}{3} \right) dx$$

$$\#16: \quad 0 - 0 = - \frac{1}{A \cdot E} \cdot \left(\frac{L^4}{12} + L \cdot X1 \right)$$

$$\#17: \quad X1 = - \frac{\frac{3}{L}}{12}$$

Sustituyendo en la ecuación de equilibrio de la estructura completa:

$$\#18: \quad \frac{\frac{3}{L}}{3} + - \frac{\frac{3}{L}}{12} + X2 = 0$$

$$\#19: \quad X2 = - \frac{\frac{3}{L}}{4}$$