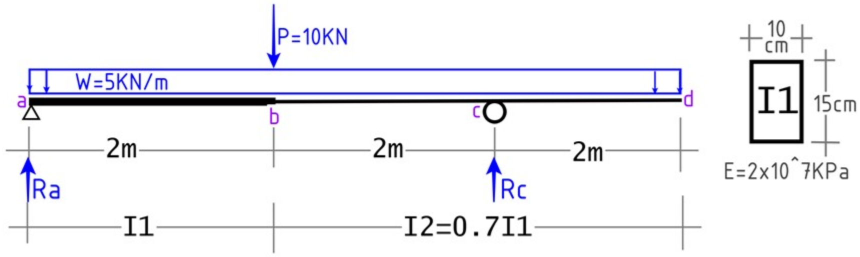


#1: [CaseMode ≔ Sensitive, InputMode ≔ Word]

#2: $\left[W ≔ 5,\ P ≔ 10,\ Ra ≔,\ Rb ≔,\ I1 ≔ \frac{1}{12}\cdot 0.1\cdot 0.15^{3},\ I2 ≔ 0.7\cdot I1,\ E ≔ 2\cdot 10^{7}\right]$

#3: $\begin{bmatrix} MFab(x) ≔ & MFbc(x) ≔ & MFcd(x) ≔ \\ vab(x) ≔ & vbc(x) ≔ & vcd(x) ≔ \end{bmatrix}$

Equilibrio:

#4: $\begin{bmatrix} Ra + Rc - W\cdot 6 - P = 0 \\ - W\cdot 6\cdot 3 - 10\cdot 2 + Rc\cdot 4 = 0 \end{bmatrix}$

#5: $\left[Ra ≔ \frac{25}{2},\ Rc ≔ \frac{55}{2}\right]$

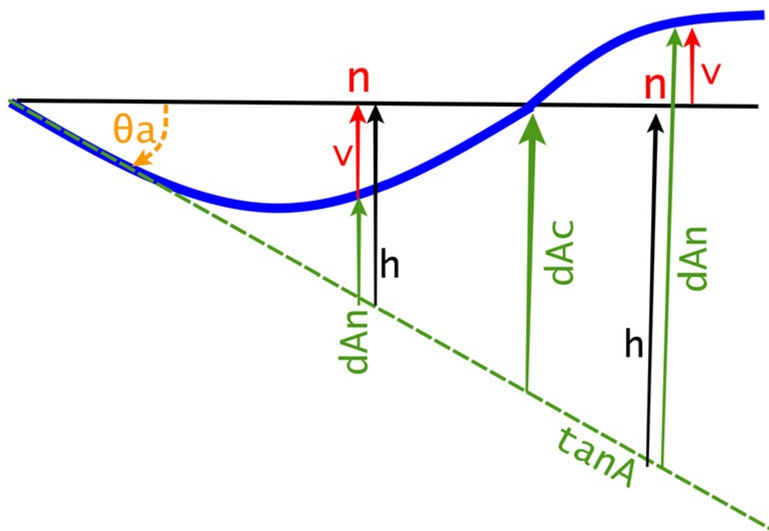
#6: $[Ra = 12.5 \wedge Rc = 27.5]$

Diagrama de momento flector:

#7: $\begin{bmatrix} MFab(x) ≔ Ra\cdot x - \frac{W\cdot x^{2}}{2} \\ MFbc(x) ≔ Ra\cdot x - \frac{W\cdot x^{2}}{2} - P\cdot(x - 2) \\ MFcd(x) ≔ Ra\cdot x - \frac{W\cdot x^{2}}{2} - P\cdot(x - 2) + Rc\cdot(x - 4) \end{bmatrix}$

#8:
$$\left[\begin{array}{c} MFab(x) := \frac{25\cdot x}{2} - \frac{5\cdot x^2}{2} \\ MFbc(x) := -\frac{5\cdot x^2}{2} + \frac{5\cdot x}{2} + 20 \\ MFcd(x) := -\frac{5\cdot x^2}{2} + 30\cdot x - 90 \end{array}\right]$$

Curva elástica estimada:



#9: $$dAC = \frac{1}{E}\cdot\left(\int_0^2 \frac{MFab(x)\cdot(4 - x)}{I1}\,dx + \int_2^4 \frac{MFbc(x)\cdot(4 - x)}{I2}\,dx\right)$$

#10: $$dAC = 0.1312169312$$

#11: $$dAC = \frac{124}{945}$$

#12: $$\frac{dAC}{4} = \frac{h}{n}$$

#13: $$h = \frac{31\cdot n}{945}$$

Tramo de [0≤x≤2]:

#14: $$dAn\_ab = \frac{1}{E}\cdot\int_{0}^{n} \frac{MFab(x)\cdot(n - x)}{I1}\, dx$$

#15: $$dAn\_ab = \frac{n^{3}\cdot(10 - n)}{2700}$$

#16: $vab(x) := -\ (h - dAn\_ab)$

#17: $$vab(x) := -\left(\frac{31\cdot n}{945} - \frac{n^{3}\cdot(10 - n)}{2700}\right)$$

#18: $$vab(x) := -\ \frac{31\cdot x}{945} + \frac{x^{3}\cdot(10 - x)}{2700}$$

#19: $$vab(x) := -\ \frac{x^{4}}{2700} + \frac{x^{3}}{270} - \frac{31\cdot x}{945}$$

Tramo de [2≤x≤4]:

#20: $$dAn\_bc = \frac{1}{E}\cdot\left(\int_{0}^{2} \frac{MFab(x)\cdot(n - x)}{I1}\, dx + \int_{2}^{n} \frac{MFbc(x)\cdot(n - x)}{I2}\, dx\right)$$

#21: $$dAn\_bc = -\ \frac{5\cdot n^{4} - 10\cdot n^{3} - 240\cdot n^{2} + 612\cdot n - 488}{9450}$$

#22: $vbc(x) := -\ (h - dAn\_bc)$

#23: $$vbc(x) := -\left(\frac{31\cdot n}{945} - -\ \frac{5\cdot n^{4} - 10\cdot n^{3} - 240\cdot n^{2} + 612\cdot n - 488}{9450}\right)$$

#24: $$vbc(x) := -\left(\frac{31\cdot x}{945} - -\ \frac{5\cdot x^{4} - 10\cdot x^{3} - 240\cdot x^{2} + 612\cdot x - 488}{9450}\right)$$

#25: $$vbc(x) := -\frac{x^4}{1890} + \frac{x^3}{945} + \frac{8\cdot x^2}{315} - \frac{461\cdot x}{4725} + \frac{244}{4725}$$

Tramo de [4≤x≤6]:

#26: $$dAn\_cd = \frac{1}{E}\cdot\left(\int_0^2 \frac{MFab(x)\cdot(n - x)}{I1}\, dx + \int_2^4 \frac{MFbc(x)\cdot(n - x)}{I2}\, dx + \int_4^n \frac{MFcd(x)\cdot(n - x)}{I2}\, dx\right)$$

#27: $$dAn\_cd = -\frac{5\cdot n^4 - 120\cdot n^3 + 1080\cdot n^2 - 4668\cdot n + 6552}{9450}$$

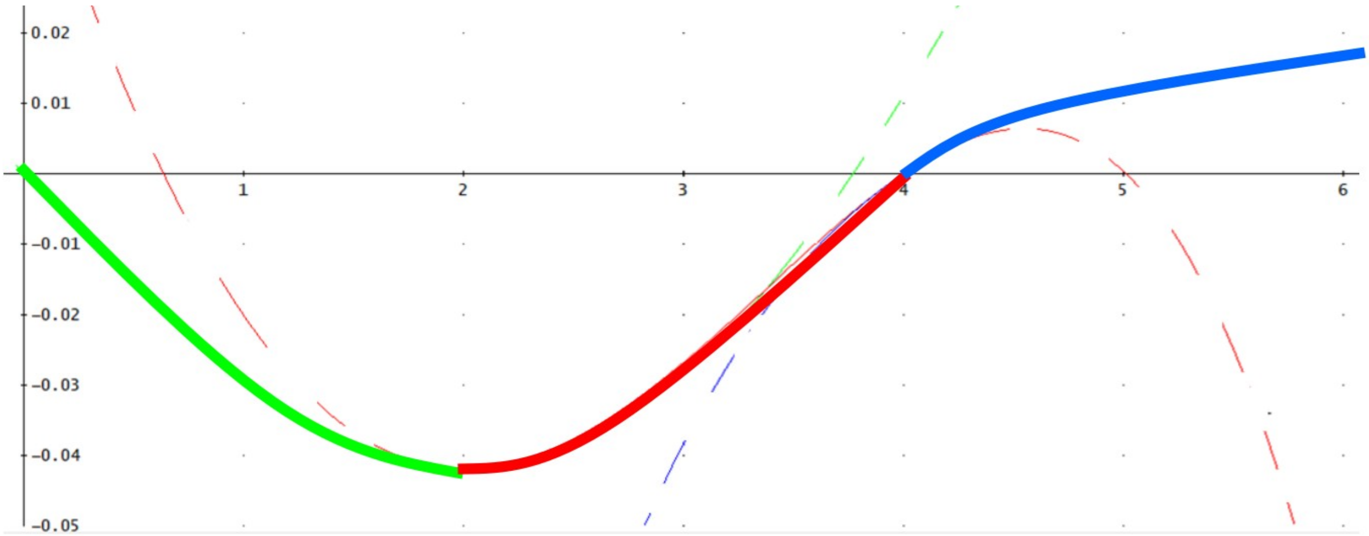
#28: $vcd(x) := dAn\_cd - h$

#29: $$vcd(x) := -\frac{5\cdot n^4 - 120\cdot n^3 + 1080\cdot n^2 - 4668\cdot n + 6552}{9450} - \frac{31\cdot n}{945}$$

#30: $$vcd(x) := -\frac{5\cdot x^4 - 120\cdot x^3 + 1080\cdot x^2 - 4668\cdot x + 6552}{9450} - \frac{31\cdot x}{945}$$

#31: $$vcd(x) := -\frac{5\cdot x^4 - 120\cdot x^3 + 1080\cdot x^2 - 4358\cdot x + 6552}{9450}$$

Gráfico de la curva elástica calculada:


0.02
0.01
−0.01
−0.02
−0.03
−0.04
−0.05
1
2
3
4
5
6