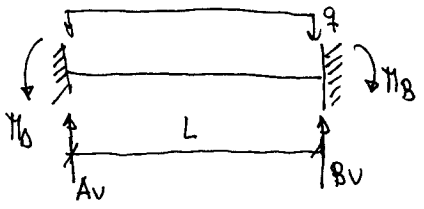
Actividad propuesta

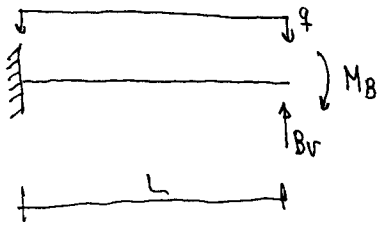
Para la viga doblemente empotrada de la figura, obtener las reacciones.



1) Vínculos

Sabemos que $\begin{cases} A_H \text{ y } B_H = 0 \\ A_V = B_V = \frac{qL}{2} \\ M_A = M_B \end{cases}$

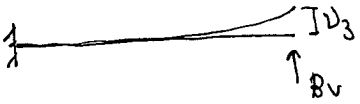
Procedimiento



$=$

$v_1 = \frac{qL^4}{8EI}$

$v_2 = \frac{mL^2}{2EI} = \frac{M_B L^2}{2EI}$



$v_3 = \frac{PL^3}{3EI} = \frac{B_V L^3}{3EI}$

$$v_1 + v_2 - v_3 = 0$$

$$\frac{qL^4}{8EI} + \frac{M_B L^2}{2EI} - \frac{B_V L^3}{3EI} = 0$$

$$\frac{qL^2}{8} + \frac{M_B}{2} - \frac{B_V L}{3} = 0 \qquad (1)$$

$A_V + B_V = qL \qquad 2B_V = qL \Rightarrow \underline{B_V = \frac{qL}{2}} \quad (2)$ Sustituyendo en 1

$$\frac{qL^2}{8} + \frac{M_B}{2} - \frac{qL^2}{6} = 0$$

$$M_B = 2\left[\frac{qL^2}{6} - \frac{qL^2}{8}\right] = 2\left[\frac{qL^2}{24}\right] = \frac{qL^2}{12} = M_B$$