
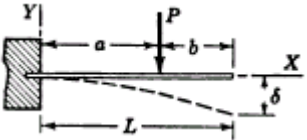
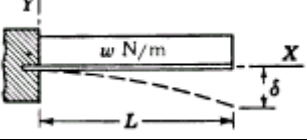


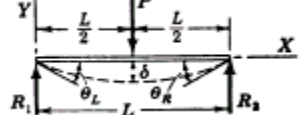


**TABLA 6-2: Resumen de vigas cargadas**

CASO N°	TIPO DE CARGA	MOMENTO MAXIMO	PRENDIENTE EN EL EXTREMO	ECUACIÓN DE LA ELASTICA	DEFLEXIÓN MAXIMA
1		$M = - PL$	$\theta = \frac{PL^2}{2EI}$	$Ely = \frac{Px^2}{6}(3L - x)$	$\delta = \frac{PL^3}{3EI}$
2		$M = - Pa$	$\theta = \frac{Pa^2}{2EI}$	$Ely = \frac{Px^2}{6}(3a - x)$ para $0 < x < a$ $Ely = \frac{Pa^2}{6}(3x - a)$ para $a < x < L$	$\delta = \frac{Pa^2}{6EI}(3L - a)$
3		$M = - \frac{wL^2}{2}$ $= - \frac{WL}{2}$	$\theta = \frac{wL^3}{6EI}$ $= \frac{WL^2}{6EI}$	$Ely = \frac{wx^2}{24}(6L^2 - 4Lx + x^2)$	$\delta = \frac{wL^4}{8EI} = \frac{WL^3}{8EI}$
4		$M = - \frac{wL^2}{6}$ $= - \frac{WL}{3}$	$\theta = \frac{wL^3}{24EI}$ $= \frac{WL^2}{12EI}$	$Ely = \frac{wx^2}{120L}(10L^3 - 10L^2x + 5Lx^2 - x^3)$	$\delta = \frac{wL^4}{30EI} = \frac{WL^3}{15EI}$
5		$M = - M$	$\theta = \frac{ML}{EI}$	$Ely = \frac{Mx^2}{2}$	$\delta = \frac{ML^2}{2EI}$
6		$M = \frac{PL}{4}$	$\theta_L = \theta_R = \frac{PL^2}{16EI}$	$Ely = \frac{Px}{12} \left( \frac{3}{4}L^2 - x^2 \right)$ para $0 < x < \frac{L}{2}$	$\delta = \frac{PL^3}{48EI}$

CASO N°	TIPO DE CARGA	MOMENTO MAXIMO	PRENDIENTE EN EL EXTREMO	ECUACIÓN DE LA ELASTICA	DEFLEXIÓN MAXIMA
7		$M = \frac{Pab}{L}$ en $x = a$	$\theta_L = \frac{Pb(L^2 - b^2)}{6EIL}$ $\theta_R = \frac{Pa(L^2 - a^2)}{6EIL}$	$EIy = \frac{Pbx}{6L} (L^2 - x^2 - b^2)$ para $0 < x < a$ $EIy = \frac{Pb}{6L} \left[ \frac{L}{b} (x - a)^3 + (L^2 - b^2)x - x^3 \right]$ para $a < x < L$	$\delta = \frac{Pb(L^2 - b^2)^{3/2}}{9\sqrt{3} EIL}$ en $x = \sqrt{\frac{L^2 - b^2}{3}}$ En el centro (no la máx.) $\delta = \frac{Pb}{48EI} (3L^2 - 4b^2)$ cuando $a > b$
8		$M = \frac{wL^2}{8}$ $= \frac{WL}{8}$	$\theta_L = \theta_R = \frac{wL^3}{24EI}$	$EIy = \frac{wx}{24} (L^3 - 2Lx^2 + x^3)$	$\delta = \frac{5wL^4}{384EI} = \frac{5WL^3}{384EI}$
9		$M = \frac{wL^2}{9\sqrt{3}}$ $= \frac{2WL}{9\sqrt{3}}$	$\theta_L = \frac{7wL^3}{360EI}$ $\theta_R = \frac{8wL^3}{360EI}$	$EIy = \frac{wx}{360L} (7L^4 - 10L^2x^2 + 3x^4)$	$\delta = \frac{2.5wL^4}{384EI} = \frac{5WL^3}{384EI}$ en $x = 0.519L$
10		$M = \frac{wL^2}{12}$ $= \frac{WL}{6}$	$\theta_L = \theta_R = \frac{5wL^3}{192EI}$	$EIy = \frac{wx}{960L} (25L^4 - 40L^2x^2 + 16x^4)$ para $0 < x < \frac{L}{2}$	$\delta = \frac{wL^4}{120EI} = \frac{WL^3}{60EI}$
11		$M = M$	$\theta_L = \frac{ML}{6EI}$ $\theta_R = \frac{ML}{3EI}$	$EIy = \frac{MLx}{6} \left( 1 - \frac{x^2}{L^2} \right)$	$\delta = \frac{ML^2}{9\sqrt{3} EI}$ en $x = \frac{L}{\sqrt{3}}$ En el centro (no la máx.) $\delta = \frac{ML^2}{16EI}$
12		$M = M$	$\theta_L = \frac{ML}{3EI}$ $\theta_R = \frac{ML}{6EI}$	$EIy = \frac{Mx}{6L} (L - x)(2L - x)$	$\delta = \frac{ML^2}{9\sqrt{3} EI}$ en $x = \left( L - \frac{L}{\sqrt{3}} \right)$ En el centro (no la máx.) $\delta = \frac{ML^2}{16EI}$