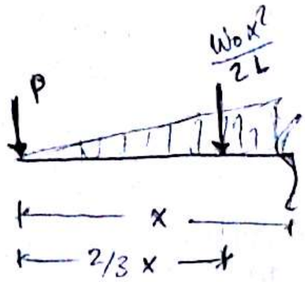
①



▷ Pendiente → $m = \frac{W_0}{L}$

▷ Resultante carga → $\frac{1}{2}\left(\frac{W_0 x}{L}\right)(x) = \frac{W_0 x^2}{2L}$

∘ Ecuación de momento

$$+\circlearrowleft \Sigma M = 0 \rightarrow Px + \frac{W_0 x^2}{2L}\left(\frac{x}{3}\right) + M = 0$$

$$M(x) = -\frac{W_0 x^3}{6L} - Px$$

∘ Integrando

$$EIy'' = M(x)$$

$$EI\theta = \int M(x)\,dx = -\frac{W_0 x^4}{24L} - \frac{Px^2}{2} + C_1$$

$$EIy = \iint M(x)\,dx\,dx = -\frac{W_0 x^5}{120L} - \frac{Px^3}{6} + C_1 x + C_2$$

∘ Evaluando condiciones de frontera

$[x = L\ ;\ \theta = 0]$ → $0 = -\frac{W_0 L^3}{24} - \frac{PL^2}{2} + C_1$ → $C_1 = \frac{W_0 L^3}{24} + \frac{PL^2}{2} = 214.8$

$[x = L\ ;\ y = 0]$ → $0 = -\frac{W_0 L^4}{120} - \frac{PL^3}{6} + 214.8L + C_2$

↳ $C_2 = -377.5$

∴ $$y = \frac{1}{EI}\left[-0.3x^5 - 8.33x^3 + 214.8x - 377.5\right] \times 10^3$$

$$\rightarrow y_A = y(0) = -\frac{377.5 \times 10^3}{(200 \times 10^9)(129 \times 10^{-6})} = -14.6\ \text{mm}$$