



1. LR

$$A_y + B_y - q \cdot l = 0$$

$$B_y \cdot l - \frac{q \cdot l^2}{2} = 0 \quad \leadsto \quad B_y = \frac{q \cdot l}{2} ; \quad A_y = \frac{q \cdot l}{2}$$

2. SR $0 < x < l$ \oplus

$$\sum M_{bz} - A_y x + \frac{qx^2}{2} = 0 \quad M_{bz}(x) = \frac{ql}{2}x - \frac{qx^2}{2}$$

$$E \cdot I \cdot w'' = -M_{bz}(x)$$

$$EI \cdot w' = \frac{ql}{2} \frac{x^2}{2} - \frac{qx^3}{6} + C_1$$

$$EI \cdot w = \frac{qlx^3}{6} - \frac{qx^4}{24} + C_1 x + C_2$$

RB: $w(0) = 0 \quad \leadsto \quad C_2 = 0$

$$w(l) = 0 \quad \leadsto \quad C_1 = \frac{ql^3}{24} - \frac{ql^3}{12}$$

$$EI w(x) = \frac{q \cdot l x^3}{6} - \frac{q x^4}{24} + C_1 x$$

$$EI w\left(\frac{l}{2}\right) = \frac{q \cdot l \left(\frac{l}{2}\right)^3}{6} - \frac{q \left(\frac{l}{2}\right)^4}{24} + \frac{q \cdot l^3}{24} \cdot \frac{l}{2} - \frac{q l^3}{12} \cdot \frac{l}{2}$$

$$w\left(\frac{l}{2}\right) = \frac{5ql^4}{384EI}$$

$$I = \frac{b \cdot h^3}{12}$$

