



$$\frac{d^3 v(z)}{dz^3} = C_1 \quad \frac{d^2 v(z)}{dz^2} = C_1 z + C_2$$

$$\frac{dv(z)}{dz} = \frac{C_1 z^2}{2} + C_2 z + C_3$$

$$v(z) = \frac{C_1 z^3}{6} + \frac{C_2 z^2}{2} + C_3 z + C_4$$

$$z=0 \rightarrow \bar{v}_A = 0, \quad M_A = -ql^2$$

$$z=l \rightarrow \bar{v}_B = \bar{v}_B, \quad \phi_B = 0$$

$$\bar{v}_A = 0 \rightarrow C_4 = 0$$

$$M_A = -ql^2 \rightarrow \frac{d^2 v(z)}{dz^2} = \frac{M(z)}{EI} = \frac{ql^2}{EI}$$

e quindi

$$C_2 = \frac{ql^2}{EI}$$

$$\begin{aligned} \bar{v}_B = \bar{v}_B \rightarrow \frac{C_1 l^3}{6} + \frac{ql^2}{EI} \frac{l^2}{2} + C_3 l &= \\ &= \frac{C_1 l^3}{6} + \frac{ql^4}{2EI} + C_3 l = \bar{v}_B \end{aligned}$$

$$\phi_B = 0 \rightarrow C_1 \frac{l^2}{2} + \frac{ql^3}{EI} + C_3 = 0$$

$$C_3 = -C_1 \frac{l^2}{2} - \frac{ql^3}{EI}$$

$$\frac{C_1 l^3}{6} + \frac{ql^4}{2EI} - C_1 \frac{l^3}{2} - \frac{ql^4}{EI} = -\frac{C_1 l^3}{3} - \frac{ql^4}{2EI} = \bar{v}_B$$