



$$0 \leq z \leq l/2$$

$$0 \leq z' \leq l/2$$

$$M(z) = \frac{ql}{8} z$$

$$M(z') = \frac{3ql}{8} z' - \frac{qz'^2}{2}$$

$$\frac{d^2v}{dz^2} = -\frac{ql}{8EI} z$$

$$\frac{d^2v}{dz'^2} = -\frac{3ql}{8EI} z' + \frac{qz'^2}{2EI}$$

$$\frac{dv}{dz} = -\frac{ql}{16EI} z^2 + C_1$$

$$\frac{dv}{dz'} = -\frac{3ql}{16EI} z'^2 + \frac{qz'^3}{6EI} + C_2$$

$$v = -\frac{ql}{48EI} z^3 + C_1 z + C_2$$

$$v = -\frac{3ql}{48EI} z'^3 + \frac{qz'^4}{24EI} +$$

$$+ C_3 z' + C_4$$

$$\begin{aligned} z=0 &\Rightarrow v=0 \Rightarrow C_2=0 \\ z'=0 &\Rightarrow v=0 \Rightarrow C_4=0 \end{aligned}$$