$$0 = -M_0 L + \frac{wL^3}{4} - \frac{wL^3}{6}$$

$$\therefore \quad M_0 = \frac{wL^2}{12}$$

Integrating for deflection :

$$EI\,y = -M_0 \frac{x^2}{2} + R\frac{x^3}{6} - \frac{wx^4}{24} + B$$

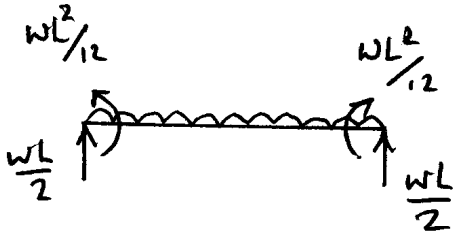
End condition (iii)

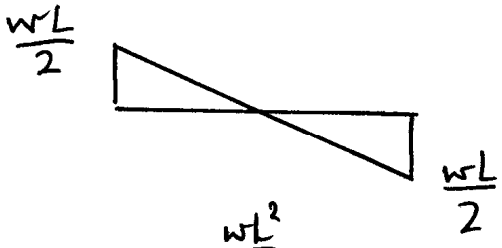
$y = 0$ at $x = 0$ $\quad \therefore \quad B = 0$

y_{max} (at $x = \frac{L}{2}$ by Symmetry)

$$EI\,y_{max} = -\frac{wL^2}{12}\cdot\frac{L^2}{8} + \frac{wL}{2}\cdot\frac{L^3}{48} - \frac{wL^4}{384}$$

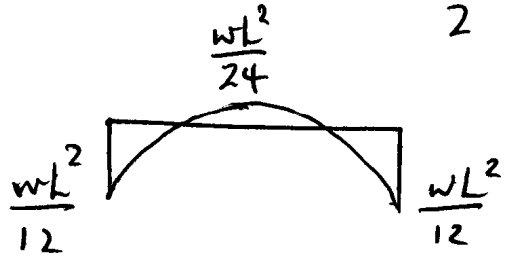
$$\therefore \quad \underline{y_{max} = -\frac{wL^4}{384\,EI}}$$





Shear Force

$$V_{max} = \frac{wL}{2}$$



Bending Moment

$$M_{max} = -\frac{wL^2}{12}$$