

System of ODE:

given:

$$w(x) := \boxed{C_0} + C_1 \cdot x + C_2 \cdot x^2 + C_3 \cdot x^3 + \frac{1}{24} \cdot x^4$$

$$[C_0 \ C_1 \ C_2 \ C_3] := \begin{bmatrix} w(0) = 0 \\ w(1) = 0 \\ w''(0) = 0 \\ w''(1) = 0 \end{bmatrix} \xrightarrow{\text{solve, } C_0, C_1, C_2, C_3} \begin{bmatrix} 0 & \frac{1}{24} & 0 & -\frac{1}{12} \end{bmatrix}$$

$$\begin{bmatrix} C_0 \\ C_1 \\ C_2 \\ C_3 \end{bmatrix} \rightarrow \begin{bmatrix} 0 \\ \frac{1}{24} \\ 0 \\ -\frac{1}{12} \end{bmatrix}$$