$$\begin{cases} u'' + u = 0 \\ u(0) = a \\ u'(0) = b \end{cases} \qquad \underbrace{C_{-1}u_{m-1}}_{\cos} + C_0 u_m + \underbrace{C_1 u_{m+1}}_{\cos} + u_m = u''_m + u_m = 0$$

$$u''(x_m) \sim C_{-1}u_{m-1} + C_0 u_m + C_1 u_{m+1}$$

$$\begin{array}{l|l} C_{-1}\cdot & u_{m-1} = u_m + \sum_{k=1}^{p} \frac{(-1)^k h^k}{k!} u_m^{(k)} = u_m + \sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} u_m^{(2l)} - \sum_{\substack{l=1 \\ 2l-1 \leq p}} \frac{h^{2l-1}}{(2l-1)!} u_m^{(2l-1)} \\ C_1 \cdot & u_{m+1} = u_m + \sum_{k=1}^{p} \frac{h^k}{k!} u_m^{(k)} = u_m + \sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} u_m^{(2l)} + \sum_{\substack{l=1 \\ 2l-1 \leq p}} \frac{h^{2l-1}}{(2l-1)!} u_m^{(2l-1)} \\ C_0 + 1 & u_m \end{array}$$

$$\boxed{u_m^{(2l)} = (-1)^{l-1} u''_m}$$

u_m : $\quad C_{-1} + C_0 + C_1 = 0$

$u_m^{(2l-1)}$: $\quad C_1 - C_{-1} = 0$

$$(C_1 + C_{-1}) \sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} (-1)^{l-1} = 1$$

$$C_1 = C_{-1} = \frac{-1/2}{\underbrace{\sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} (-1)^l}_{\cos}}$$

$$u_0 = a$$

$$\frac{u_1 - u_0}{h} = b + R$$

$$u_1 = u_0 + \sum_{k=1}^{p} \frac{h^k}{k!} u_0^{(k)} = u_0 + \sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} u_0^{(2l)} + \sum_{\substack{l=1 \\ 2l-1 \leq p}} \frac{h^{2l-1}}{(2l-1)!} u_0^{(2l-1)} =$$

$$\begin{cases} u_0^{(2l)} = (-1)^l u_0 \\ u_0^{(2l-1)} = (-1)^{l-1} u_1 \end{cases}$$

$$= u_0 + \sum_{\substack{l=1 \\ 2l \leq p}} \frac{h^{2l}}{(2l)!} (-1)^l u_0 + \sum_{\substack{l=1 \\ 2l-1 \leq p}} \frac{h^{2l-1}}{(2l-1)!} (-1)^{l-1} u'_0$$