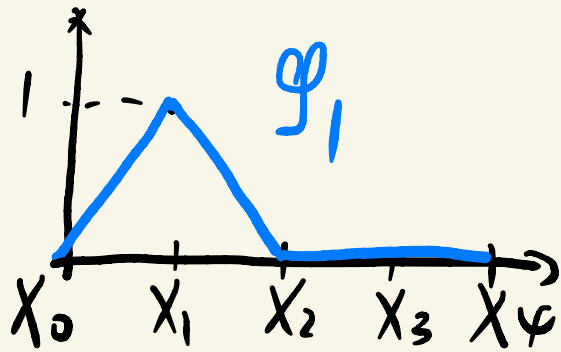


计算 $A_{11} = \int_0^1 \varphi_1' \cdot \varphi_1' dx$.

P3



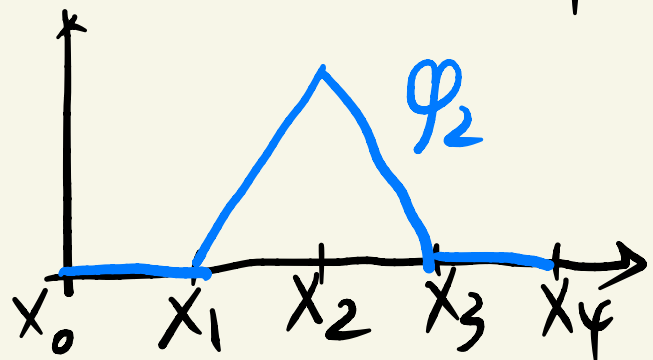
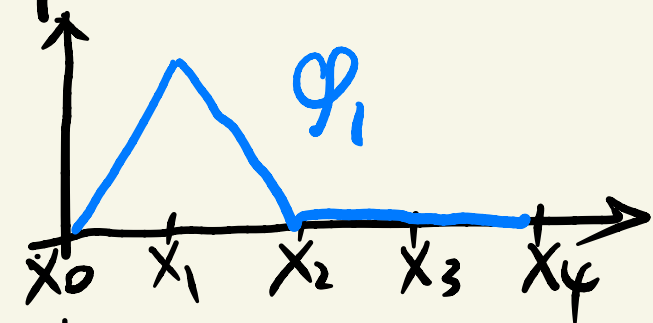
因此 $\varphi_1' = \begin{cases} +1/h & \text{in } (x_0, x_1) \\ -1/h & \text{in } (x_1, x_2) \\ 0 & \text{in } (x_2, x_4) \end{cases}$

因此 $A_{11} = \int_{x_0}^{x_1} (+1/h)^2 dx + \int_{x_1}^{x_2} (-1/h)^2 dx$

$$= 1/h + 1/h = 2/h$$

计算 $A_{12} = \int_0^1 \varphi_2' \cdot \varphi_1' dx$

1P4

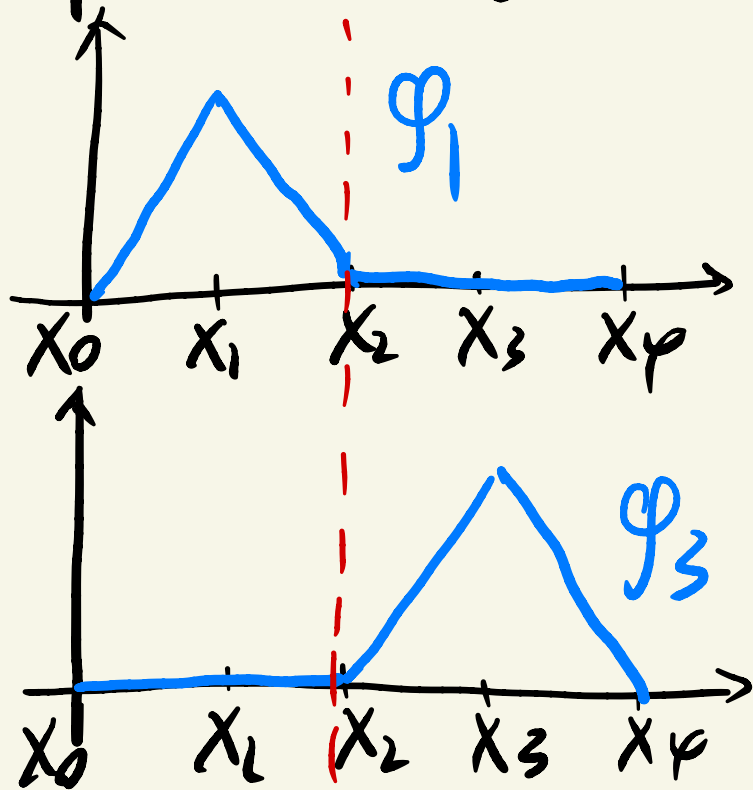


且知 $\varphi_2' = \begin{cases} 0 & \text{in } (x_0, x_1) \\ +1/h & \text{in } (x_1, x_2) \\ -1/h & \text{in } (x_2, x_3) \\ 0 & \text{in } (x_3, x_4) \end{cases}$

$\begin{cases} 0 & \text{in } (x_0, x_1) \\ +1/h & \text{in } (x_1, x_2) \\ -1/h & \text{in } (x_2, x_3) \\ 0 & \text{in } (x_3, x_4) \end{cases}$

因此 $A_{12} = \int_{x_1}^{x_2} (+1/h) \cdot (-1/h) dx$
 $= -1/h$

计算 $A_{13} = \int_0^1 \varphi_3' \cdot \varphi_1' dx$



且 $\varphi_3 = \begin{cases} 0 & \text{in } (x_0, x_2) \\ +1/h & \text{in } (x_2, x_3) \\ -1/h & \text{in } (x_3, x_4) \end{cases}$

$\varphi_3 = \begin{cases} 0 & \text{in } (x_0, x_2) \\ +1/h & \text{in } (x_2, x_3) \\ -1/h & \text{in } (x_3, x_4) \end{cases}$

因此 $A_{13} = 0$