Lab 8 Written Work

Thursday, October 19, 2023 1:45 PM

$$M_{i-1}\cdot\frac{1}{12} + M_i\cdot\frac{1}{3} + M_{i+1} = \frac{y_{i+1} - 2y_i + y_{i-1}}{2h^2}$$

$$\begin{bmatrix} \frac{1}{3} & \frac{1}{12} & 0 & 0 & 0 & 0 \\ \frac{1}{12} & \frac{1}{3} & \frac{1}{12} & & & \\ 0 & \frac{1}{12} & \frac{1}{3} & \ddots & & \frac{1}{12} \\ 0 & \vdots & & & & \\ 0 & 0 & & & \frac{1}{12} & \frac{1}{3} \end{bmatrix} \begin{bmatrix} M_1 \\ M_2 \\ M_3 \\ \vdots \\ M_{n-1} \end{bmatrix} = \begin{bmatrix} \frac{y_2 - 2y_1 + y_0}{2h^2} \\ \frac{y_3 - 2y_2 + y_1}{2h^2} \\ \vdots \\ \frac{y_{i+1} - 2y_i + y_{i-1}}{2h^2} \end{bmatrix}$$