

Assignment 28

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28-1

Equations:

$$\begin{aligned}0.2 &= a + b \\0.25 &= a + 2b \\0.5 &= a + 3b\end{aligned}$$

Matrix equation:

$$\begin{bmatrix} 1 & 1 \\ 1 & 2 \\ 1 & 3 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} = \begin{bmatrix} 0.2 \\ 0.25 \\ 0.5 \end{bmatrix}$$

Approximation of the solution:

$$\begin{aligned}\begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \end{bmatrix} \begin{bmatrix} 1 & 1 \\ 1 & 2 \\ 1 & 3 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} &= \begin{bmatrix} 1 & 1 & 1 \\ 1 & 2 & 3 \end{bmatrix} \begin{bmatrix} 0.2 \\ 0.25 \\ 0.5 \end{bmatrix} \\ \begin{bmatrix} 3 & 6 \\ 6 & 14 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} &= \begin{bmatrix} 0.95 \\ 2.2 \end{bmatrix} \\ \begin{bmatrix} \frac{7}{3} & -1 \\ -1 & \frac{1}{2} \end{bmatrix} \begin{bmatrix} 3 & 6 \\ 6 & 14 \end{bmatrix} \begin{bmatrix} a \\ b \end{bmatrix} &= \begin{bmatrix} \frac{7}{3} & -1 \\ -1 & \frac{1}{2} \end{bmatrix} \begin{bmatrix} 0.95 \\ 2.2 \end{bmatrix} \\ \begin{bmatrix} a \\ b \end{bmatrix} &= \begin{bmatrix} \frac{1}{60} \\ \frac{1}{20} \end{bmatrix}\end{aligned}$$

Solution:

$$y = \frac{1}{60} + \frac{3x}{20}$$