

In order to fit $f(t, \mathbf{x}) = x_1 t x_2 e^t$ data points $(1, 2), (2, 3), (3, 5)$, we first create matrix

$$A = \begin{bmatrix} 1 & e \\ 2 & e^2 \\ 3 & e^3 \end{bmatrix}$$

Now we have

$$\begin{bmatrix} 1 & e \\ 2 & e^2 \\ 3 & e^3 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 2 \\ 3 \\ 5 \end{bmatrix}$$