CSE 401: Numerical Analysis - Fall 2016
Homework 2

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Problem 2:

Given system:

$$f(t, \mathbf{x}) = x_1 \cdot t + x_2 \cdot e^t$$

and corresponding data (t_i,f_i)

$$\begin{Bmatrix} t_t \\ t_2 \\ t_3 \end{Bmatrix} = \begin{Bmatrix} 1 \\ 2 \\ 3 \end{Bmatrix}$$

$$\begin{Bmatrix} f_1 \\ f_2 \\ f_3 \end{Bmatrix} = \begin{Bmatrix} 2 \\ 3 \\ 5 \end{Bmatrix}$$

Thus the linear least squares system can be set up as follows:

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