System is

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

Notice that since the function is linear in x_i, it is still a linear system.

We can also rewrite $f(t, \boldsymbol{x})$ as $\begin{bmatrix} t & e^t \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix}$

The system of equations, given the data points becomes:

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

$$b = \begin{bmatrix} 2 \\ 3 \\ 5 \end{bmatrix}$$

Therefore, the system of equations is:

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