$\mathrm{Ax} \cong \mathrm{b}$

Where, $A = \begin{bmatrix} 1 & e^1 \\ 2 & e^2 \\ 3 & e^3 \end{bmatrix},\ x = \begin{bmatrix} x_1 \\ x_2 \end{bmatrix},\ b = \begin{bmatrix} 2 \\ 3 \\ 5 \end{bmatrix}$

By normal equation:$\mathrm{A}^T Ax = \mathrm{A}^T b$

$\mathrm{x} = (\mathrm{A}^T A)^{-1}\mathrm{A}^T b = \begin{bmatrix} 1.5942 \\ 0.0088 \end{bmatrix}$

Thus, $\mathrm{f(t,x)} = 1.5942\mathrm{t} + 0.0088e^t$