EX.4.1.1.b, Sauer3

Solve the normal equations to find the least squares solution and 2-norm error for the following inconsistent system

$$
\begin{bmatrix} 1 & 1 \\ 2 & 1 \\ 3 & 1 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}.
$$