EX.4.3.8.a, Sauer3

Find the QR factorization and use it to solve the following least squares problem

$$\begin{bmatrix} 1 & 4 \\ -1 & 1 \\ 1 & 1 \\ 1 & 0 \end{bmatrix} \begin{bmatrix} x_1 \\ x_2 \end{bmatrix} = \begin{bmatrix} 3 \\ 1 \\ 1 \\ -3 \end{bmatrix}.$$

Suggestion: Use the Gram-Schmidt algorithm for getting the QR factorization, and remember that a thin QR factorization is enough for this problem. No need to compute a full QR factorization.