Name:

Tardis:

Write up solutions to these problems as clearly and thoroughly as possible. Feel free to use books, notes, friends, etc.

Let $V = \text{span}\{ \begin{bmatrix} 1 \\ 2 \\ 0 \end{bmatrix}, \begin{bmatrix} 1 \\ 1 \\ 1 \end{bmatrix} \}$.

a) Find an orthogonal basis for V. Is the basis you chose orthonormal? Why or why not?

b) Let

$$A = \begin{bmatrix} 1 & 1 \\ 2 & 1 \\ 0 & 1 \end{bmatrix}.$$

What is the least squares solution to the problem

$$Ax = \begin{bmatrix} 1 \\ 3 \\ 1 \end{bmatrix}?$$