Name:

Linear Algebra II - Quiz 4

All the solutions should be properly justified and explained. Clarity of the presentation will also be rewarded.

The maximal number of points awarded is 10. We consider the following vectors of \mathbb{R}^4 :

$$\vec{u} = \begin{bmatrix} 1\\ -1\\ 0\\ 0 \end{bmatrix} \quad \text{and} \quad \vec{v} = \begin{bmatrix} 0\\ 1\\ -1\\ 0 \end{bmatrix} \quad \text{and} \quad \vec{w} = \begin{bmatrix} 0\\ 0\\ 1\\ -1 \end{bmatrix}.$$

1. Justify that \vec{u} , \vec{v} and \vec{w} form a basis of the subspace V of equation $x_1 + x_2 + x_3 + x_4 = 0$.

2. Using the Gram-Schmidt process, compute an orthonormal basis of V.