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 $\mathbb{R}^{4}$ :

$$
\vec{u}=\left[\begin{array}{c}
1 \\
-1 \\
0 \\
0
\end{array}\right] \quad \text { and } \quad \vec{v}=\left[\begin{array}{c}
0 \\
1 \\
-1 \\
0
\end{array}\right] \quad \text { and } \quad \vec{w}=\left[\begin{array}{c}
0 \\
0 \\
1 \\
-1
\end{array}\right] .
$$

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 $V$.
