| MA 237-02 <br> §4.1-6.1 | QuiZ \#5 |  | same: |
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1. Find the coordinates of $X=[1,2]^{t}$ in the ordered basis $\left\{[1,1]^{t},[2,-1]^{t}\right\}$. Show your work. (5 points)
2. Use the Gram-Schmidt process to find an orthogonal basis for the subspace of $\mathbb{R}^{3}$ spanned by the vectors $\{[0,1,1],[1,1,1]\}$. (5 points)
3. Find the determinant of the matrix

$$
\left[\begin{array}{ccc}
0 & 2 & 0 \\
2 & 127 & 2 \\
1 & -89 & 1
\end{array}\right]
$$

by expanding along the first row. Show your work. Based on your calculation of the determinant, does this matrix have an inverse? Explain. (5 points)
4. Determine if the vector $X=[1,2,1]$ is an eigenvector for the matrix (5 points)

$$
A=\left[\begin{array}{lll}
1 & 2 & 3 \\
3 & 2 & 1 \\
1 & 1 & 1
\end{array}\right]
$$

