

Name: _____

Math 2250, Fall 2011, Quiz 4

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In the following questions, let T be a linear transformation $\mathbf{R}^2 \rightarrow \mathbf{R}^3$.

1. If $T \begin{bmatrix} 1 \\ 0 \end{bmatrix} = \begin{bmatrix} 7 \\ 1 \\ 3 \end{bmatrix}$ and $T \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}$, find $T \begin{bmatrix} 1 \\ 5 \end{bmatrix}$.

2. For the same transformation T , find the matrix representation of T .

3. If $T \begin{bmatrix} 1 \\ 1 \end{bmatrix} = \begin{bmatrix} 7 \\ 1 \\ 3 \end{bmatrix}$ and $T \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}$, find $T \begin{bmatrix} 1 \\ 5 \end{bmatrix}$.

4. (Extra credit) If $T \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 7 \\ 1 \\ 3 \end{bmatrix}$ and $T \begin{bmatrix} 2 \\ 1 \end{bmatrix} = \begin{bmatrix} 1 \\ 1 \\ -1 \end{bmatrix}$, find $T \begin{bmatrix} 1 \\ 5 \end{bmatrix}$.
